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Coal for the Market; Shall We Keep It Clean or "Use It Rough" and Then Clean It? pp. 845-849

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COAL AGE

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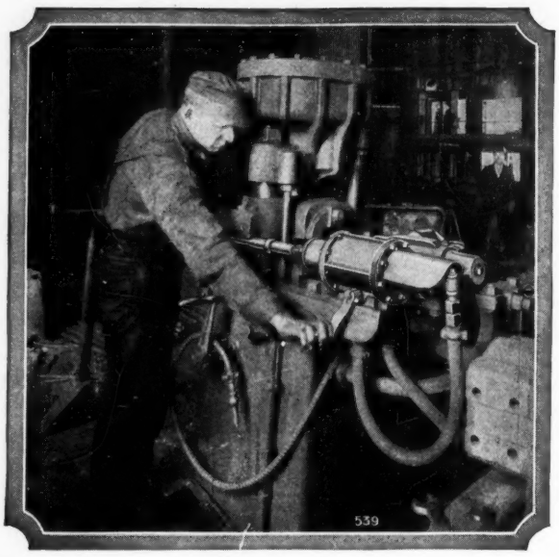

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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 23 NEW YORK, MAY 24, 1923 Number 21

Negation Not Good Publicity

WHATEVER may be the ultimate outcome of the controversy over unionism, how it thrives, expands, contracts and controls, the coal industry must continue to live with the public. At a recent gathering in New York, Lawrence Abbott, of *The Outlook*, remarked that coal is the worst-hated industry in this country today, and no coal operator took exception to this sweeping assertion. One ventured the virtue of the anthracite operators as the reason for such gross misunderstanding of coal; others set it to plain lack of understanding. We venture to note that this lack is no more with the public than with the rank and file of the coal operators themselves.

Put aside for the moment the outstanding men in the industry, both among operators and labor unions, and give thought to the men—numbering thousands among operators and hundreds of thousands among mine workers—who take no part in association or union activities, who do not participate in the national thought of those few who are the reputed leaders of their respective groups. Interest in and knowledge of the larger happenings affecting their industry are subordinated to the immediate problems of the day. Contact with the public is loose and appreciation of the public's attitude toward coal is hazy and uncertain.

The coal operator, whether in the hills of Virginia, Kentucky or Utah, knows that when he has orders, cars and men he can ship coal and he will take almost any price he can get, whether high or low. That is all there is to his business. Give him orders and cars and men not on strike and he performs all that society desires or requires. Until a few years ago there was no question regarding the price, save that from the producer's standpoint it was too low. Car shortages were exceptionally few, national strikes of mine workers unknown, demand was regularly irregular and therefore consistently unsatisfactory. Small wonder then that today's hue and cry over coal is least of all understood by the coal man. Prevent strikes and furnish cars, says the coal operator, and there will be no com plaint by anyone. And he is quite right.

It is right here, however, that the trouble begins. The railroads, it is quite generally understood, are handicapped in their ability to supply unlimited transportation to coal by reason of regulation over many years that has restricted their expansion. The negligence of years is not to be overcome in a day. The LaFollettes and Brookharts preach further restriction. The public alone can decree a more liberal policy toward the carriers, and the public is slow to learn and to give voice to its desire. When railroads were young they were reverenced; now they are too often reviled. The coal industry must do more than blame the railroads for lack of transportation; it must help bridge over the gap until such time as the country may again have transportation in measurable surplus.

Nor will it avail to convict the miners' union of every high crime on the calendar. The railroads are regulated by federal and state officials and by laws that are expression of public opinion, but the United Mine Workers recognizes no law save of its own making. Its creed is simple—More Power; its policy simple—No Reduction in Wage.

There is nothing in the spirit of this land encouraging the belief that organized labor can be controlled in these matters by law. There remains only the organized economic strength of the operators as a bulwark for the safety of the country.

It therefore follows that until the union operators are agreed on a policy and program of united aggressive bargaining with the union of the miners, they have nothing to tell the public; the industry otherwise can but make apologies for that which happens beyond its control.

Prospects in the Export Situation

ON THE whole the European coal situation is becoming easier. It is now quite apparent that Germany has had large stocks on which to sustain her industries throughout the last four months and that although very little coal or coke is being allowed to sift eastward through the French blockade, Germany is not suffering from lack of fuel, as is had been expected that by this time would be the case.

Accounts vary as to the quantity of coke France is getting from the Ruhr. The highest estimates are from English sources, showing 10,000 tons per day, compared with 12,000 tons per day before the occupation. A special dispatch to the *New York Times* dated at Paris May 20 says that the maximum so far received has been 8,000 tons of coke per day. Other figures are lower. At any rate it is becoming increasingly evident that France and Belgium are getting more nearly their needed requirements of blast-furnace fuel. The export demand for coke has fallen off materially on this side and in England as well. Although in January there were 116 furnaces in blast in France compared with but 77 today, production of French iron and steel is gaining and their products are again competing in the Continental market. In Germany, coal prices are receding and German buyers are much less active in the English market. By the end of April there was a congestion of coal-loaded steamers waiting to discharge at the German ports. It is further reported that German buyers of English coal have in recent weeks been reselling purchases made earlier.

There is nothing in the situation today to warrant high hopes of active foreign demand for American coal this summer. True, some continue to anticipate it, but the wish must be father to the thought. As has been noted here in the past, prediction on this score is futile in view of the complications abroad, with much ground for believing that if Europe develops a real want for our coal, it will not be evident until late this year.

Crystallization

FOR generations we have proclaimed that our American civilization was still fluid, that we were always ready to correct the ill-chosen and to root out the inefficient, ready for a second thought to displace a first, if by chance the first was not the best. Insensibly, however, we bind fetters on ourselves while marveling that other nations older than our own are bound by chains of custom and convention.

Of this one cannot but be reminded by the decision of the umpire of the Anthracite Conciliation Board of May 16 that the Hudson Coal Co. must remove the system of checking in and out at the East End, Baltimore No. 5 and Marvine collieries. Doubtless the umpire's decision is perfectly just legally, though he himself probably is quite clear in his mind that practices which are inherently loose and unbusinesslike should be done away with.

He states in his decision that the company has "no right to make any changes without the consent of the other party." Seeing, however, that no changes in the working agreement except to raise wages have been made since 1902, it would seem that the standard of that year has been unduly persistent. With the mine workers demanding all manner of facts from the coal companies, involving weeks of bookkeeping—concessions from them that are not demanded of any employers of labor except the railroads—it seems strange that those employers cannot meet the fabulous statements of the miners with facts based on a knowledge of the hours spent underground. Hardly any employer of labor anywhere is so ignorant of this important element of operation as is the mine operator, and this ignorance has been and is by this decision forced on him. As a result what he knows and can assert qualitatively he cannot declare quantitively and the public, which expects an exact measure in hours and minutes and looks suspiciously at guesses, is little disposed to put any credence in the operator's statements.

Here is a matter that need not be one of doubt. Here is a figure that every company but a coal-mining company can give definitively. What is wrong with the coal operator that he alone cannot give this information which everyone knows is more vital than any other in the settlement of labor disputes? The mine worker quite readily says that in the anthracite region the working time is eight hours when it isn't more, and as the contract calls for hours of that kind for some of the employees the public cannot understand how others of them, not so bound, are leaving the mines after a much shorter period of time. What wonder, then, that it questions the existence of a shorter day which the operator asserts is worked without being able definitely to delimit it!

This is only one of many features that have been crystallized in anthracite operation since 1902 and that tend to become fixed in bituminous mines also. When the contracts are signed smaller matters are brushed aside. The wage becomes the sole consideration, and both sides, as well as the public after a protracted idleness, resent the consideration of any matter, however important, that holds up settlement.

Unfortunately the same public that cannot understand why agreements are a matter for haggling and delay is always disposed to look at the contract when signed and to ask why it did not contain certain provisions and did contain others and to wonder whether the faults of the contract, whether as to wages or conditions, are not the outcome of a sort of treasonable collusion to take advantage of the public. Consequently every effort should be made to incorporate provisions that the interest of the consumer in cheaper coal demands. The Coal Commission has found that the operators have given it all it asks and that the only item it has had denied to it is information as to working time, and that could have been obtained had the union not made every effort to keep it secret.

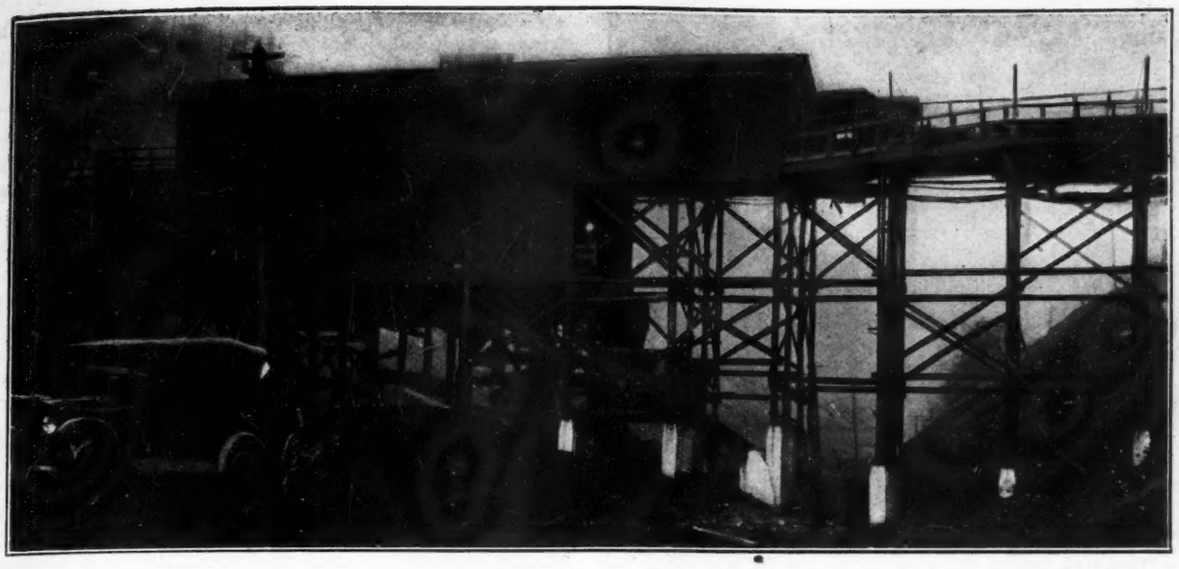
Less Disturbance, Please

IN ILLINOIS the state teachers' association, perceiving that a tax on coal at the mines might be a source of revenue for increased teachers' wages and for state educational work, are trying to induce the Legislature to levy an 8c. tonnage tax. There really is no likelihood of an 8c. tax bill being enacted. Nobody expects that; not even the teachers. But were the bill amended, reducing the proposed tax to 1c. or 2c. the probability of its enactment would be much greater. That is exactly what will be done if the bill is pushed far enough to be reported out of committee. Then the fight will be on in the House and Senate of the Legislature, and another disturbance will be started in the coal industry.

This case illustrates the old truism that coal is a fair target for any marksman. Here is coal being taken from the ground. From 60,000,000 to 80,000,000 tons of it is mined in Illinois every year. Why not tax it? What a gold mine that would be for the tax diggers of the state! Even 1c. a ton would yield $600,000 a year at least. Two cents would make it $1,200,000. Now if the teachers of the state could only add that $1,200,000 to their salaries! Why not try? It is always easy to raise a popular clamor against the coal barons vividly pictured fattening gluttonously from the shriveling bank account of the abused and helpless public. Why not make the barons pay the $1,200,000?

Would they merely take it away from the people in higher coal prices? Well, let them. It's only 2c. a ton, and anyway a good deal of it would be collected from consumers outside the state, so what do the Illinois teachers• care? But the teachers doubt whether the barons actually would be able to raise the price to the people. Wouldn't competition from nearby states prevent that? It can be said to the teachers that large volumes of coal from outside Illinois are sold in that state, some of it in direct competition with Illinois coal. A good deal of this is placed because the Illinois mining companies labor under compulsory regulations covering compensation, safety and the like which add to the cost of production an item far above that of competing regions. Every new law such as the proposed severance tax swells this compulsory cost. The larger this margin, the stiffer the competition from outside coal. So something might be said to the teachers about the goose and the golden egg.

But the main argument just now against taxing the coal of Illinois or Kentucky or any of the other coal-producing states whose legislatures have coal-production tax bills on their dockets, is that the United States Coal Commission is doing its best to find solutions for the complex problems of the coal industry, and if the people of this country want remedies applied they should aid that commission in every way possible. Setting up state disturbances in the coal industry is a poor way to aid. Let all coal tax bills wait.



Mining Methods in the Elkhorn District Conserve the Coal and Retain It in Its Original Purity

Parting Loaded or Gobbed Before Coal Is Shot—Shovel on Boards or Coal Floor—Parting Barred Loose and Both Kerf and Room Ends Swept Clean—Cutting Machines Cleaned and Inspected Daily

BY ALPHONSE F. BROSKY
Assistant Editor, *Coal Age*, Pittsburgh, Pa.

THE Elkhorn Division of the Consolidation Coal Co. is now operating fourteen mines in the Elkhorn district of Kentucky, which are better known as the Jenkins-McRoberts plants. Eight of these mines are off the Sandy Valley & Elkhorn R.R. and the other six lie close to the Lexington & Eastern R.R. The openings of Mine No. 204 are at Jenkins, those of Mines Nos. 203 and 205 are on the outskirts of that village. Mines Nos. 201 and 202 are entered at Burdine and Mines Nos. 206, 207 and 208 are at Dunham, the latter two dumping over one tipple. This completes the list of those on the Jenkins side of the mountain. On the McRoberts side of the property are Mines Nos. 210, 211 and 212, which dump over one tipple, and Mines Nos. 213, 214 and 215, which are operated as individual plants.

All these mines eventually will be connected with each other; at present Mine No. 204 connects with Mine No. 207 by an outside tramroad on the Jenkins side of the property, and the latter connects with the workings of Mine No. 214 on the McRoberts side, so that any of the coal, whether near Jenkins or McRoberts, may be dumped on either side of the mountain, and the McRoberts mine, with a minimum of transportation difficulty can obtain supplies from the central shops in Jenkins, which also can make repairs whenever they may be needed.

Most of the 100,000 acres held by this company in eastern Kentucky lies in the Elkhorn field and about 12,000 acres is now under development. With all mines in the division working the daily output is about 10,000 tons. Mine No. 204 is the largest operation; it contributes 1,500 to 1,700 tons of coal each working day.

In the Elkhorn district most of the mining is in a seam of the same name. The coal is excellently adapted for metallurgical purposes, for byproduct coking and for gas-producing, to which uses is put most of the coal shipped. It is interesting here to note that most of the diligent effort exercised in the production of clean coal is exhibited underground, emphasis being laid upon preventing the coal from getting dirty rather than upon cleaning it when it has become mixed with dirt.

Most mines mix dirt with the coal and then employ men or machines to remove it later—if they can. Preventive measures where the coal is unusually clean, like the Elkhorn coal, are better than those which are merely corrective. It would be fair to describe this method as circumventing trouble at its source. All tipples are equipped with screens but, nevertheless, much run-of-mine coal is loaded, as the demand for unscreened coal from the Elkhorn seam is far in excess of that for domestic sizes.

An analysis of a number of seam samples taken at various mines is as follows: Moisture, 1.62; volatile matter, 36.98; fixed carbon, 59.36; ash, 2.04; sulphur, 0.53 (included also in the ash), and phosphorus, 0.005. The heating value of the coal is about 14,619 B.t.u.

In these mines the thickness of the Elkhorn seam varies from 6 to 10 ft., the average thickness being about 8 ft., though in a few places coal 12 ft. thick may be found. The bed is characterized by a shale parting below the center, which varies from a knife

NOTE—Headpiece shows tipple of Mine No. 214, McRoberts, Ky. The coal is dumped by means of a crossover dump onto shaker screens. The slate is discharged by a kickback dump into an 80-ton slate bin, shown on the left of the illustration, and is then carried to a hillside dump by an aerial tram.

FIG. 1—ROOM ENTRY IN MINE NO. 204, JENKINS, KY.
The parting has been cut by an arcwall machine, the waste material cleaned out and the bottom bench of coal shot and loaded. The parting is of soft shale and usually is from 3 to 6 in. thick. The assertion has been made that an arcwall machine will not cut a straight rib. How about this one? Note particularly the well-squared corners. The cut on the left rib is the first one made in the excavation of a crosscut. Coal is left in the roof, as the high lights on its surface indicate.

edge to a thickness of 18 in. and more rarely of 36 in. Its thickness usually is 3 to 6 in. Because this parting usually is fairly soft, it will break up and mix with the coal unless precautions are taken in the mining, after which it can be separated satisfactorily from the coal by no other means than by washing.

At many mines of the Logan field (West Virginia) most care is exercised in coal preparation on the tipple and less attention than usual is given to preparation or care at the face, while at the mines of the Consolidation Coal Co., in the Elkhorn field, the opposite is true, for in these mines care of the coal at the face is considered highly important. No argument can be based on the difference in the relative reception of the coals from these two fields, for the coals enter different markets. Five seams are mined in the West Virginia field just mentioned, the coals from which in the main are used for general steam purposes and some for domestic use, gas producing and byproduct coking; whereas the Elkhorn coal is used chiefly for the last-mentioned purpose.

The fact that the parting has to be removed in these mines led to the development of the Jeffrey Drennan adjustable-turret mining machine, from which the arcwall coal cutter was developed. For details regarding the cutting of coal in these mines the reader is referred to *Coal Age*, Dec. 20, 1913, p. 926. The arcwall machine is used to do the cutting because only by removing the soft shale parting, then thoroughly cleaning out the cut and sweeping the face and bottom for some distance back before shooting, can a clean coal be loaded into the mine car. As the thickness and the position of the parting in the seam varies from place to place the cutter bar must be adjustable vertically.

About twenty-four arcwall machines, equipped with the latest and improved types of starting box and cutting resistance and carrying a No. 2 all-rubber cable of the concentric type, are used exclusively in the mines of the division. They make a cut 6 to 6½ ft. deep and for the full width of the place, which is in entries 11 ft. and in rooms 12 to 15 ft. wide. One machine has, and will, cut 12,000 tons of coal per month. Yet the machine has not yet cut all that is expected of it. A record of *sixty-two places* in nine hours was attained by a cutting crew using but one machine, whereas twenty-five to forty places are cut daily by each machine, which, when taken on an average for a month's work, yields thirty places per shift.

Often it is said of the arcwall machine that it is not flexible enough in manipulation in a horizontal plane so that it will drive a roadway straight, with the ribs at an even distance. The burden of such complaint usually is attributable to attempts being made to cut places too wide; at other times to the inexperience of the operative.

The arcwall machine can cut a straight-ribbed place, as an inspection of the headings and rooms driven in these mines proves. In fact when the roadway is cut by an experienced runner the ribs are as straight as with any other mining machine. If straight entries, aligned track and a uniform clearance along the walkway in these mines are manifestations of the ability of the arcwall machine to cut a straight rib, then the complaint surely is fallacious.

The more experience a runner has acquired, the quicker will he cut and the straighter will be his rib line. Practice will enable him to set the tip of the cutter bar at the corner between the rib and the face, to sump in under the traction of the truck, to pull the cutter bar across the face by rope and drum until it assumes the exact angle with the lineal axis of the truck to indicate that the correct width is attained, and then to sump out again under traction, straightening the rib line with that of the room or entry. The cycle of the operation is accomplished positively and quickly, with few manipulations, but only after the runner and his helper become experienced in the control of the machine.

Another complaint is that the cutter bar leaves the parting and cuts in the coal. This is not a justifiable complaint, for where such action takes place the machine has been misapplied. Wherever the parting is much harder than the coal containing it, undercutting or topcutting—depending upon the height of the coal and the nature of the roof—preferably should be adopted, so that the coal may be loaded out either in two benches and the slate thus separated, or it may be separated partly at the face after bringing down both benches simultaneously, the refinements of cleaning being accomplished on the tipple. The arcwall cutting machine works at its best in a soft parting such as often occurs in the Elkhorn seam.

At the Elkhorn mines of the Consolidation Coal Co. the machine men cut by contract entirely and agree to keep the machines ready for inspection at any time.

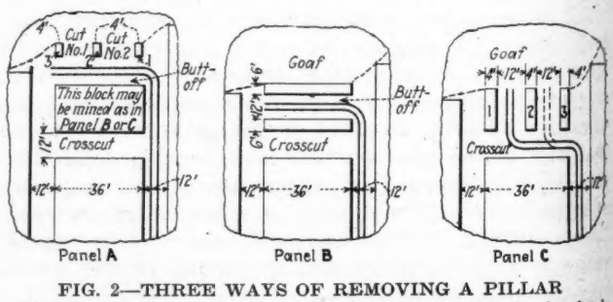


FIG. 2—THREE WAYS OF REMOVING A PILLAR
The first shows the method where the crosscut is so far back as not to weaken the pillar line in any measurable manner. The second shows the same method applied despite the presence of the crosscut. This method is successful if the pressure is not too severe, the coal too friable or the roof weak. The third shows a way whereby the pillar is split by longitudinal roadways from the crosscut. Crosscuts so weaken pillars and interfere with pillaring that one cannot but wonder if General O'Toole does not do well when in an 800-ft. room he burdens himself with but one of them.

By this is not meant that they must maintain the machines in proper repair. They must, however, handle them judiciously and report all troubles. During offshifts the cutting machines stand in the locomotive barn or under a shed built near the drift mouth. At the close of a shift the machine is returned to its shelter, and consequently the operatives are enabled to use it for riding into and out of the mine.

Upon reaching the surface the crew is required to blow off all cuttings and dust from the cutting machine with air at a pressure of 110 lb., this being supplied by a small compressor unit installed solely for that purpose. Much of the wear on cutting machines is caused by the grinding of cuttings between rubbing surfaces.

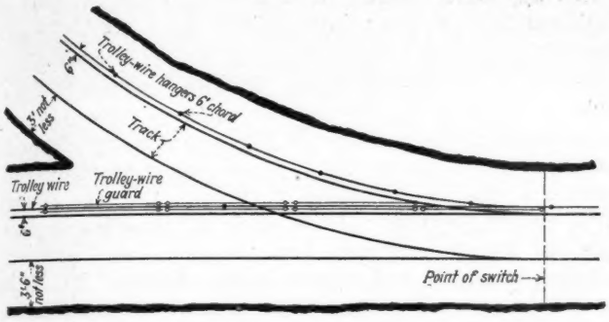


FIG. 3—STANDARD TROLLEY-WIRE PROTECTION
Here the trolley guards are put on either side of the wire where it crosses the branch road. This is a right-hand curve.

Air under a heavy pressure will dislodge all dirt from the exposed surfaces and most of the finer particles from the innermost cracks and crannies. Keep the cuttings off the exposed surfaces as much as possible, and wearing will be minimized on bearings, gears, chains, etc.

The arcwall machines are given a thorough inspection each day by a machine boss or his helper and any defects righted. This accounts for the continuity of service, which is further demonstrated by the low cost of upkeep.

Coal is mined by the room-and-pillar multiple-entry system. Entries are driven 11 ft. wide on 35-ft. centers. The main entry consists of two haulageways, a manway, and two airways on either side which serve as intake, making a total of seven entries. The large sectional area thus provided to the splits permits of a low velocity in the ventilating current. At intervals of 1,400 to 2,200 ft., depending upon conditions, cross-entries are turned from the main entries, and the panels thus formed are developed separately, being isolated from adjacent panels by barrier pillars.

Rooms Driven Narrow Save Row of Timber

The cross-entry consists of two haulageways and an airway which may be either on the right or the left depending upon the territory to be developed. As many room entries are driven off the cross-entries as the crop line will permit. Barrier pillars along the main entry are 200 ft. wide, and those on the cross-entries are about 175 ft.; barriers also are left under the streams on the surface.

After years of experimentation the company concludes that in recovering the Elkhorn seam the narrow room with a length of 200 to 300 ft. gives the best results. Rooms of different widths were driven in some places as a means of determining definitely which cross-section would provide the most ready and economical

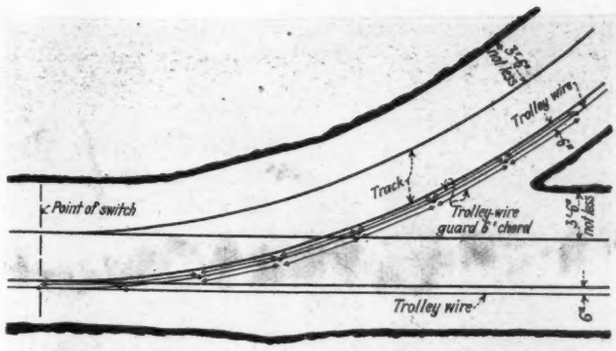


FIG. 4—STANDARD TROLLEY-WIRE PROTECTION
Trolley guards are put on either side of the wire where it crosses the main road. This shows a left-hand curve.

mining. High coal and a roof not too strong make a narrow room necessary. A room no wider than 15 ft. yields the best results. Specifically, a 12-ft. room is favored, for those driven any wider usually must be timbered.

Three representative systems of room layout which have been tried experimentally in these mines now must be mentioned. The first system provided for a 22-ft. room with a center track and with rows of posts on 5-ft. centers on either side of the roadway. Later a 15-ft. room was tried with one row of posts opposite the side from which the pillar is drawn. These posts are placed 30 in. from the rib and 22 in. from the track on 4-ft. centers, though they may be placed as close as occasion demands. The cap piece used is 2 in. thick and 18 in. long. In these wide rooms refuse from the parting and that incidental to preparing for the next cut could be, and was, gobbed.

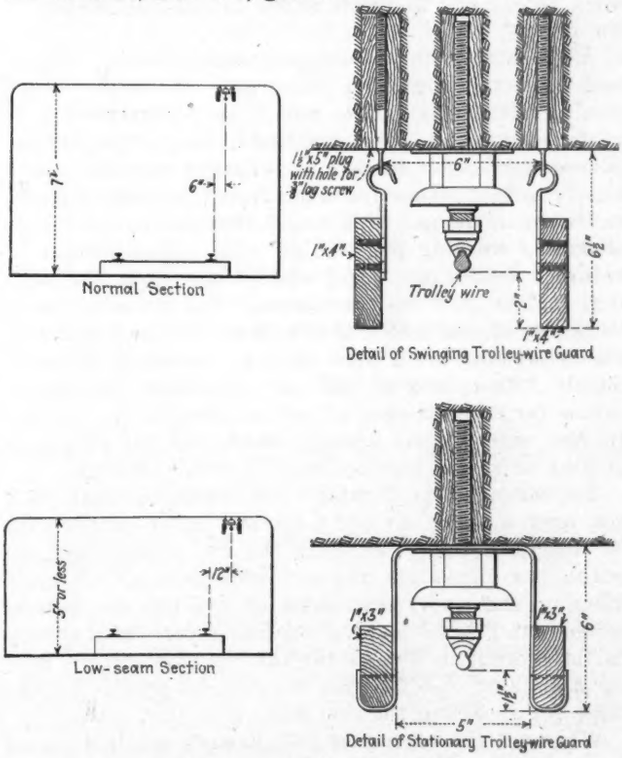


FIG. 5—METHOD OF HANGING GUARDS AND WIRE
The rules of the company say: "All places where men are compelled to pass under the trolley wire should be protected with guards. Trolley wire should be hung 6 in. from the outside of the rail. In low places this can be increased to 12 in. Where the track is straight and level, trolley-wire hangers should be placed every 15 to 20 ft. On curves of 63-ft. and 112-ft. radius, one hanger should be placed every 6 ft. Where the top is irregular additional hangers should be used to maintain the trolley wire at uniform height."

FIG. 6—REMOVING PILLAR FROM A 12-FT. ROOM

The road curving to the right is entering a buttoff, the fourth so far made into the pillar of this room. That there is pressure can be seen by the thin slab of coal to the right of the illustration that has slid to the track. Still conditions are favorable for a good recovery, for the fall in the gob is a good one and comes up to the wing pillar of the buttoff, which is 6-ft. wide. Note how little can be seen in this illustration of the clay parting in the coal.

It was discovered thereafter that a 12-ft. room is easier to keep in condition than wider rooms. The present systsm, based on 12-ft. rooms located on 50-ft. centers, is best because the rooms are easily cut, the top stands well and from all other points of view it makes an excellent working place.

In the event that there is not enough coal in a 12-ft. room to accommodate a diligent loader, the width is increased to 14 or 15 ft. in order to give him enough work; but after the width exceeds 12 ft. a row of posts must be set and as much refuse as possible gobbed in the room.

All fines from the refuse produced in cutting entries and rooms is thrown on the track; the larger pieces coming both from entries and from the narrow 12-ft. room is loaded into mine cars and hauled to the surface. Where seventy-five loaders are engaged each day about eighty cars of refuse are taken from the working places to the waste dump. This means that before the coal is shot at a working place 12 ft. wide, about one car of refuse is loaded out, all of which comes from the parting, for the roof does not scale, being protected by a thickness of coal which is left there for the support of the drawslate. As a place such as this yields approximately fifteen tons of coal per cut, about one car of refuse for each six cars of coal is taken to the surface. In the wider rooms already mentioned the refuse is gobbed, as is also that incident to pillar drawing.

The management furnishes each working place with a scraper, a punch bar and a broom. After cutting with the machine, the miner with the flat scraper and the punch bar cleans out the cut, punching out all overhanging and underlying shale on the top and bottom of the cut. After loading out the refuse into a mine car he thoroughly sweeps the cut, the face and the floor for a distance of 6 ft. from the face, to provide a clean table for shoveling the coal after it is shot down.

Wherever the bottom is soft, boards are laid across the working place, and the coal which rolls out is shoveled from the platform thus formed. Under such conditions the bottom holes are bored high enough to permit leaving a ply of coal 4 to 6 in. thick from which the loader shovels. After the bottom and top benches are loaded out this bottom slab is taken up carefully. The lumps are thrown into the mine car, and the fine coal shoveled on the truck as refuse.

The lower bench is shot and loaded out first and the upper bench last. Two holes in each bench are drilled 12 to 14 in. from the rib. Safety props need not be set during the loading of the lower bench as the shooting is so well regulated and the coal so solid that the upper bench hangs unsupported; in fact, this coal has been known to hang for years.

Unless the roof of shale is protected from the air, to which it is markedly susceptible, it is held only with difficulty; otherwise it will spall and flake badly. Consequently 10 to 14 in. of coal is left in the roof on the entries and about 12 in. in the rooms. This holds the roof securely in most cases, though where the roof coal comes down on the haulageways, at turnouts especially, steel timbering is applied immediately. In the retreat about 8 in. of this coal is lost, which is unfortunate, as it is of the same quality as that which is recovered.

In order to be sure that all cuts are properly cleaned, all blasting of the coal is done by a shot foreman who makes a careful inspection of the cut, the face of the coal and the bottom. If the work is completed as prescribed by the company and the holes are correctly drilled, he loads and shoots them. Monobel No. 5 is used as an explosive and is fired by an electric detonator with a small magneto battery.

Samples, taken monthly at the face of each working entry, are sent to the laboratory of the company, where accurate analyses are made; and from time to time samples are taken from the coal at the tipple in order to check the care with which it is being prepared.

Several methods of pillar drawing have been tested, among others slabbing, drawing on the advance and drawing on the retreat. Pillars are pulled retreating except in some few sections where a system is already established necessitating pillar drawing on the advance. The former method has been adopted as standard because it is the most economical and safest.

Pillars are brought back generally by butting-off with a place 12 ft. wide (equal to the width of the room), leaving a wing rib 3 to 6 ft. wide toward the gob. In excavating this buttoff and in other pillar work no coal is left in the roof, contrary to the custom in

FIG. 7—FUSES PROTECT POWER LINES AT NIGHT

During the day a section needs plenty of power for mining machines and locomotives. Should a wire fall and a short-circuit occur, a fire might be started, but there would be men nearby who could cope with the trouble. At night, however, it might not be so. Consequently the line switch is thrown and a fuse switch, which will melt if more than 60 amperes is passed through it, is used to protect the current. Note the size and character of the shale parting.

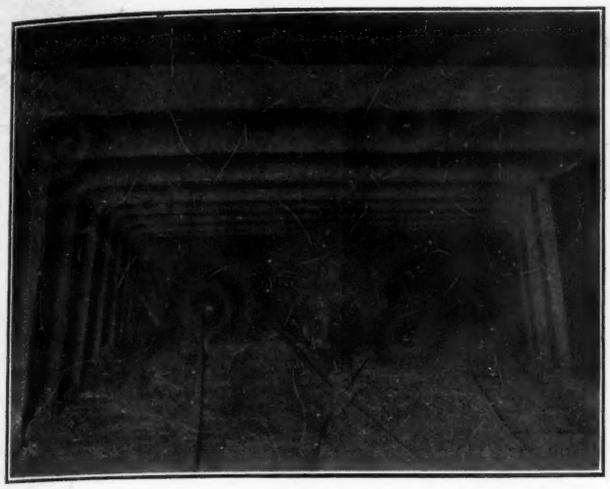


FIG. 8—STEEL SETS AT TURNOUT, MINE NO. 201
The longest of these beams is 20 ft. These are standard sets made of 12- and 6-in. I-beams on 5-ft. centers. Note the strength of the concrete pier, which is faced on its edge with two rails.

driving rooms and entries. On the other hand about 8 in. of coal is left in the roof above the rooms and entries in the retreat. If the roof load is not excessive a 6-ft. wing is butted off. Then a machine cut 12 ft. long is made through that half of the wing farthest away from the working room, leaving a 4 x 6-ft. stump to be drawn by hand picks.

The second cut of the same length is made between two 4 x 6-ft. stumps, thus completing the extraction of that wing as in Panel A, Fig. 2. Usually the same method is continued toward the entry. Sometimes a thinner wing is split from the pillar. If possible, the narrow pillar, approximately 3 ft. wide, is cut by the machine, but wherever the roof will not permit of machine cutting the wing is drawn by hand picks.

About twenty split posts are used in each cutoff, only a portion of which are recovered. The loss of steel is small. In the rooms 30-lb. and in the buttoffs 20-lb. rail are used. Short jumper lengths are placed in the butoff beyond the curve so that the track may be more readily torn up on the retreat.

If the pillar between the fall and one of the crosscuts driven on the advance is approximately 24 ft. wide and roof is fair, the block may be butted off, developing wings on each side, both of which can be brought back together as in Panel B, Fig. 1. If, however, the roof is bad the block may be worked from the breakthrough by driving two subrooms bounded by subpillars 4 ft. wide, as in Panel C, Fig. 1.

In driving entries track is laid on the advance in alternate crosscuts. These are closed by doors. The other crosscuts are sealed with permanent stoppings. A row of posts is carried up the center of all room and entry crosscuts whether they are closed by brattices or stoppings, except, of course, those laid with track. This is done to keep up the roof and insure an open place in case the pillar when being extracted has to be split. Usually these props are not recovered.

Ventilation at the larger mines is accomplished by a 14 x 5-ft. fan belt-driven by a 150-hp. alternating-current motor. This fan is set in a brick building with a fan casing of brick and steel, which is provided with reversible doors and protected by light explosion walls which form part of the air conduit to the mine. The fan speed, being fixed by the size of the pulley on the motor, always is constant except when starting.

Like all other high-volatile coals, that from the Elkhorn seam ignites readily, so extreme care must be taken to prevent mine fires. A number of years ago the company had a fire in one of its mines, which caused it to adopt as a fixed ruling the requirement that all mines must be equipped with a fuse switch in conjunction with the line switch. During the day's run, while all men are working, the line switch is closed; but during the off shifts this switch is opened and the circuit closed through a fuse switch. A Buss shellacked fuse with a capacity of 60 amp., furnished by the Bussman Mfg. Co., of St. Louis, is found well suited for the purpose. If, because of a roof fall, the line is knocked down the circuit is broken by the blowing of this low-amperage fuse, before the line can set fire to the coal on the floor.

Where loose roof is encountered along the entries steel sets and beams are applied in a manner best suited to the local need. In one place I found sets of steel on 6-ft. centers composed of an 8-in. I-beam cap resting upon 4-in. I-section legs of the batter type. Sometimes straight legs are employed but batter legs have the preference. These timber sets are strung with two courses of locust posts and filled to the roof with similar material. Where the timbers are not protected by a concrete wall they are braced with 6 x 6-in. oak.

In another place, at a turnout, 60-lb. rails on 3-ft. centers are used to support the roof. Hitch posts in either rib rest on the lower bench of the coal just below the parting and support the rails, of which there are thirty-five, varying in length from 12 to 24 ft., and strung with split-timber lagging. Posts are set in both ribs, which procedure is unusual, for at most coal mines where hitch posts are used only one hitch post is employed for each cap. Both posts, being of the same length and supported on the same coal surface, settle gradually and equally under the load imposed on them.

At another turnout nine sets of steel timbers made up of 12-in. beams for caps and 6-in. sections for legs are set up on 5-ft. centers. These are braced between by heavy oak at both the top and the bottom. The roof above these sets is high, and in consequence cribbing has been built to the roof above a course of 3-in. lagging. The corner of the concrete pier at this place is faced with two 40-lb. rails and the concrete likewise is reinforced with scrap iron. Sometimes 10-in. beams and 5-in. legs are used at turnouts where the roof is stronger than that at the place just described.

Ford Paid $2,783,000 For Kentucky Land; Now About Ready to Build Railroad

All speculation as to the price paid for the Peabody Syndicate coal-land holdings in eastern Kentucky came to an end last week when the Fordson Coal Co., in answer to interrogatories in the T. C. Fuller suit to set aside the sale, showed that it paid $2,783,000 for the 120,000 acres, including interest from Jan. 1, 1923, to March 17, when the option was exercised, the real value having been $2,750,000. Previous estimates of the sale price ran as high as $15,000,000. Fuller had claimed a share and demanded an accounting on the ground that the price was higher than had been announced.

Maysville on May 3 reported that surveyors had completed a survey down Brush Creek in Ohio to the Ohio River, opposite that town, and advised farmers not to plant crops on the survey this year. This is the route which it is believed will connecte the Detroit, Toledo & Ironton, the Ford railroad, at Maysville, with a branch line of the Louisville & Nashville into the southeastern Kentucky coal fields.

How the Law Shaft Is Protected Against High Water

Ideal Arrangement Is to Put Pumps in a Shaft of Their Own, Making Pipes the Only Connection with the Mine — Law Shaft Has Slope Sealed Against Workings, Giving 66,000,000 Gallons of New Storage

BY DEVER C. ASHMEAD
Kingston, Pa.

IN AN ADDRESS before the Engineers' Society of Northeastern Pennsylvania, H. H. Kudlich, superintendent of the Jermyn colliery of the Hudson Coal Co., outlined the difficulty experienced at that mine during the flood period in June and July, 1922, which, however, it may be said, did not differ materially from the difficulties that have had to be contended with at many times in numerous collieries in the anthracite region.

When a mine becomes flooded, the water often rises in the mine workings more rapidly than the pumps that have been installed can remove it, and as they are stationed near the lowest point in the mine, it is not long before they are under water and, in consequence, cannot be operated. For this reason auxiliary pumps have to be installed to remove the water that has accumulated from the flood.

In many instances the water in times of heavy rainfall has risen two hundred or more feet in elevation, and a volume of water has accumulated that can be measured only in billions of gallons. Before operations can be resumed water has to be removed, and as the main pumping plant has been flooded it cannot be used until almost all the water has been removed from the mine and the pumps put in condition for operation.

The question has arisen in the minds of many operators whose mines are subject to flood conditions, Is it possible to so design pumprooms that they will not be flooded in times of high water? This, indeed, is possible and has been done successfully in the anthracite region in three instances to my knowledge.

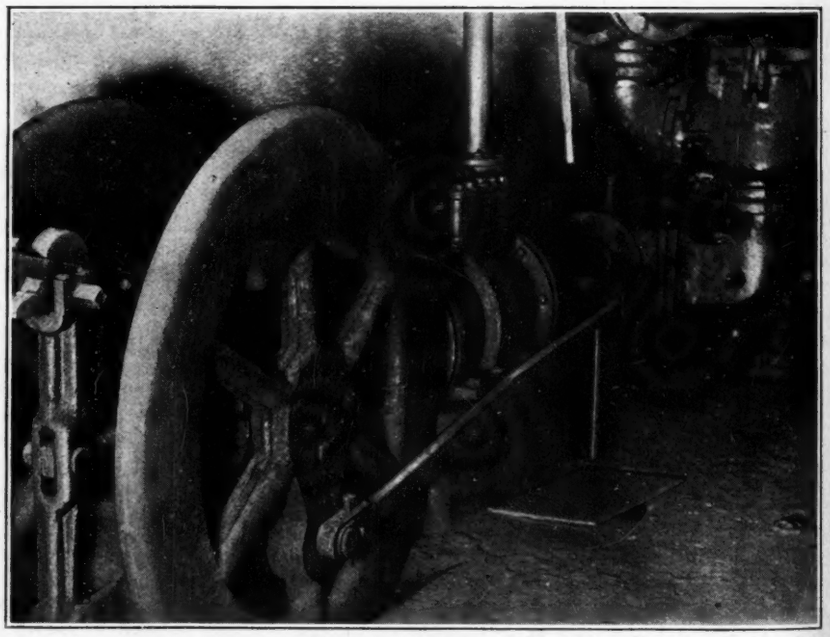
The best and safest method of constructing such a pumproom is to sink a separate shaft or slope to the point where the pumproom is to be located. If it is in the rock it is safer than if it were in the coal. Then the only connection from the pumproom to the workings should be by the pipes by which the pumps receive their water. Where such a provision is made, practically no water can enter the pumproom except through the proper means of entry, the intake pipes of the pumps. This permits the pumps to be operated no matter how badly the mines are flooded.

If this is impracticable, however, then the next best method is to use an old slope in the mine. The pumproom would be placed at the foot of this slope, and all openings into the mine would be sealed off by means of dams. This would prevent the water entering the slope or the pumproom. If the mine were deep, however, then a point would be reached where the head of water possibly would be too great for the safety of the pump runners in the pumproom, for the dams might fail and let in a deluge.

Though in this case it would be necessary to abandon the pumps before the failure took place, the chances are that the dams would hold, and when the water receded to a point at which it would be safe for the men to work, the pumproom could be re-entered and, the pumps being entirely uninjured, they could be started without any delay. They would then be able to assist in the lowering of the water. In many operations, however—even in case of a flood—the water would not rise in the mine above the danger point on the slope, and the pumps could be continuously operated, thus rapidly lowering the water in the mines. This is particularly true where the mines are shallow and subject to flooding and where the measures are flat and the water can spread over a large territory without any great increase in height.

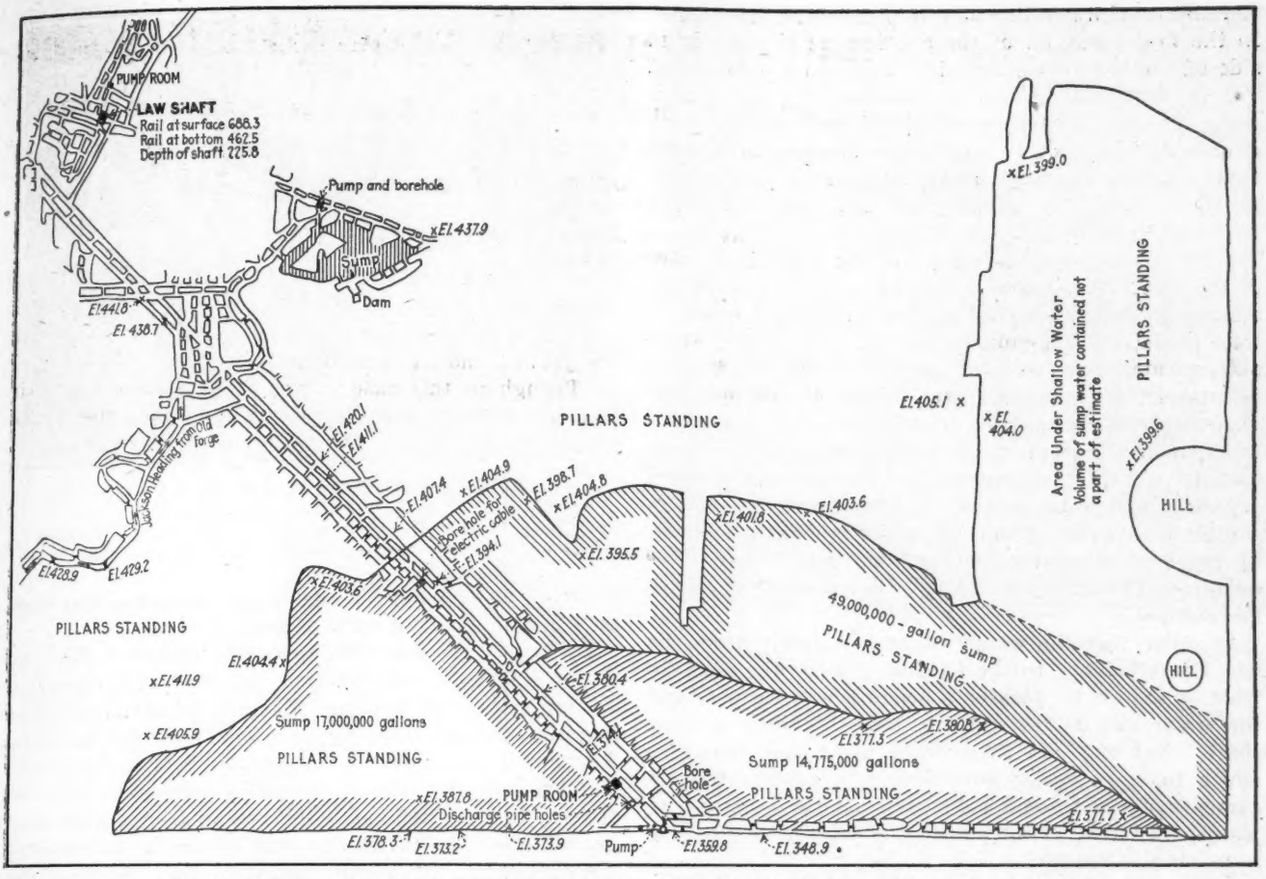
The Pennsylvania Coal Co. has made a careful study of the construction of "concealed," or submersible, pumprooms and has two of them at its operations. One of these, which is located at the Law shaft of the Central colliery near the town of Old Forge, Pa., will be described in this article.

Law shaft, No. 13 shaft of Central colliery, No. 1 and No. 2 shafts of Old Forge colliery and the Sibley shaft are all interconnected underground, making an immense



PUMP OF 1,000 GALLONS CAPACITY

This pump is of Dunmore type and is one of those in use at the Law shaft. Flywheels help the steam to maintain an even pressure on the water throughout the stroke. Some pumps of this type are used in the main pumproom at the foot of the shaft, in the old slope and at No. 2 Old Forge colliery but not in the submersible pumproom, to which, indeed, steam is not taken.



SUMP SYSTEM AT THE LAW SHAFT SHOWING AREA AVAILABLE FOR WATER STORAGE

All over the area shown pillars are standing, some near the shaft having been packed with rock. The level of the water at the lowest pump is about 360 ft., yet the water can rise till it reaches an elevation of about 400 ft. before that pump is drowned. It might not be safe to work around the pumps when under such a head, but at least they will be protected so that they can be started as soon as the water has been lowered to a point that is sure to afford safety, and, furthermore, the pumps can be arranged so as to operate continuously without attention. Of course, provision would have to be made for pumping out of the pumproom any water that might seep through the walls or floor for in a submerged room there is no place where water can drain.

area of communicating workings. The lowest of these are in the Law shaft, and naturally most of the water that is produced in these collieries could drain to this point. Part of the water, however, is collected and pumped to the surface from the pumprooms established at each of the different shafts.

In case of a flood the workings in the Law shaft would be completely flooded and the usual difficulty would be encountered in using portable pumps or pumping arrangements for dewatering the mine in case of a flood. Further, if no arrangements were made to handle the water that would collect in the lower workings it could easily rise to a sufficient height to drown out the main pumping room at the foot of the Law shaft.

In the past the water has risen until it was 3 ft. deep in the pumproom. If arrangements had been made so that the pumps in the lower levels could be operated during such inflows of water, the water level in flood periods could be kept at such a point that the water could not drown out these pumps, which are those having the greatest aggregate capacity.

In order to realize the quantity of water that has to be handled in periods of flood it may be well to enumerate the number and capacity of the pumps that are now in place in these collieries. The main pumproom, which is at the foot of the Law shaft, contains one Aldrich triplex pump with a capacity of 1,000 gallons per minute and driven by a 120-hp. motor, two Jeanesville centrifugal electric pumps, one with a capacity of 1,000 gallons and one with a capacity of 700 gallons, one Scranton pump with a capacity of 1,000 gallons, one Dunmore steam pump with a 1,000-gallons capacity, two Dunmore steam pumps each with a capacity of 1,469 gallons and one Scranton pump with a capacity of 2,000 gallons, or a total capacity of 8,939 gallons per minute.

Down in the old slope from the Law shaft is one 1,000-gallon Dunmore pump. At the No. 13 shaft of the same colliery are two old Cornish pumps having a capacity of 800 gallons each, and also one 1,000-gallon centrifugal pump. At the No. 2 shaft of the Old Forge colliery there is one 1,000-gallon Dunmore pump, two Scranton steam pumps of 1,800 gallons capacity each, and one new Barrett Haentjens electric centrifugal pump having a capacity of 2,500 gallons. At the No. 1 shaft of the same colliery is an 800-gallon Cornish pump. At the Sibley shaft are two Scranton centrifugal pumps pumping against a head of 300 ft. with a capacity of 1,800 gallons each.

This makes the total pumping capacity of the different pumprooms 24,038 gallons per minute. This capacity was not considered sufficient for protection against floods, so it was decided to establish another pumproom down the new slope from the foot of Law shaft. In this pumproom were placed two 1,500-gallon Allis Chalmers electric centrifugal pumps. These pumps worked against a head of 325 ft. This gave a total capacity of 27,038 gallons per minute for the colliery.

As it would not be difficult to drown out these pumps by flooding it was decided to make a concealed, or sub-

mersible, pumproom in which to place these new pumps. In the first place, all of the openings on the left-hand side of the slope were sealed by dams to a point about 750 ft. from the bottom of the slope. This made a sump that had a capacity of 14,775,000 gallons. Then it was decided that it might be advisable to seal by dams the three openings above these on the slope, which would increase the capacity of the sump to about 49,000,000 gallons.

If the twenty-two openings on the right-hand side of the slope were sealed, it would further increase the storage capacity by about 17,000,000 gallons, giving a total capacity of 66,000,000 gallons. This would store all the water received by the mine in 24 hours and not evacuated by the pumps, should the flood bring in 72,000 gallons per minute. It is probable that the pumps at the foot of the slope would greatly exceed their rated capacity, for the flooding would cause the water entering the pumps to be under a heavy pressure, thus lowering the actual lift. When the water reaches the height at which it will enter the slope and run down to the pumproom its free surface will be about 40 ft. above the pumps.

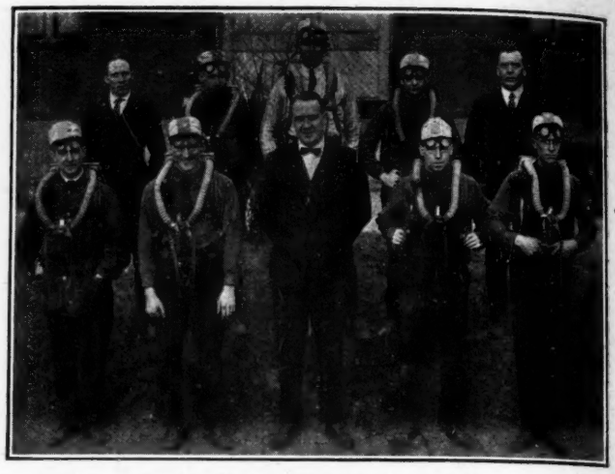
In order that the water might flow freely from the Old Forge colliery to the Central colliery the ditch in what is known as Jackson's heading was cleaned, and the water can be run directly into the sump at Law shaft. Not only are there these large new sumps in which to store water but there still remain the old sumps and these could hold back a large quantity of water. By this arrangement the danger of flooding is materially reduced.

Colleges Offer Summer Mining Courses

IN THE summer months the coal mines run only irregularly, and the short summer mining courses afford to men who desire to acquaint themselves with the science of mining an excellent opportunity to do so without losing many actual working days. Most of the mining schools have short courses arranged to accommodate those who are willing to make the slight sacrifice. The course usually lasts from a month to six weeks, and it is sufficiently long to enable a man to prepare for the mine foremen's examination and to fit him fully for the duties he must perform while acting in that capacity, not only from a safety and hygienic point of view, which is the state's concern, but from an economic point of view as well.

SOME OF THOSE TAKING THE SHORT MINING COURSE AT WEST VIRGINIA UNIVERSITY, 1922

A. C. Callen, professor of mining, is fourth from the right in the second row from the bottom. In 1922 there were 69 scholars and in 1921, 106.



MINE RESCUE TEAM AT SHORT MINING COURSE, WEST VIRGINIA UNIVERSITY

These men were trained by the West Virginia Department of Mines and are shown wearing their mine rescue equipment.

In fact, it is somewhat generally conceded that the mine foremen's examination is not comprehensive enough and should embrace first aid, mine-rescue training and enough mapping to prove that the would-be foreman is thoroughly competent to read a mine map. Perhaps the fact that many mine inspectors are not trained in first aid and mine rescue is a reason why examinations do not in any way cover these necessary requirements. It is quite probable that before many years no new mine inspectors will be appointed who have not taken at least the short mining course. It is quite conceivable, in fact, that the requirements as to academic training may be made more drastic, but this small concession to the importance of having such a grounding in the art of mining as training at a college confers doubtless will be required.

Those who have attended some such course will be enabled to find out whether they are mentally qualified and psychologically inclined to take the longer course of training that will fit them for the superintendency. The industry is not going to be content much longer to accept for the highest positions men who do not know the fundamentals of mechanical and electrical mining engineering and who consequently must rely entirely on the expert work of others.

As it is now the superintendent often is so grossly lacking in the elements of both these essential branches of a mining education that he cannot even understand the advice of those whose work it is to formulate plans for the conduct of the mechanical and electrical details of the plant. They use what is to him an unknown tongue. Certainly the least we can ask of the superintendent is that he shall learn to understand what they say.

But this is getting somewhat apart from the main subject—that of the shorter mining course. The School of Mines of Pennsylvania State College holds a free course for bituminous and anthracite mine workers from June 25 to July 28 of the present year. This is five weeks of study, but if the student cannot spare that length of time he will be welcomed for four. The first week, June 25 to June 30, will be devoted to mine safety work. In this period there will be 30 hours of intensive training in this important subject, which, as

Airplane View, Pennsylvania State College

This university — for such it really is —has an excellent School of Mines presided over by E. A. Holbrook, for a while acting director of the U. S. Bureau of Mines. It is an ideal place for a summer course in mining as it is on the high ground of the Appalachian Mountains where the student will escape much of the overpowering heat that is so distressing to those who are accustomed to be in the cool of the mines during the heat of the day. *(Courtesy U. S. Army Air Service)*

has been said, should be understood by every fireboss, foreman and inspector. Thereafter the work will be divided as shown in Table I. There will be courses for beginners and for those capable of taking more advanced studies.

TABLE I—FOUR WEEKS CURRICULUM AT PENNSYLVANIA STATE COLLEGE

Preliminary Course		Advanced Course	
Study	Hours	Study	Hours
Mining law	24	Mining law	24
Mine gases	18	Electricity in mines	12
Safety lamps and gas detectors	20	Advanced mine ventilation	12
Mine fires and explosions	6	Fan testing and ventilation practice	20
Mine ventilation	30	Use of explosives	5
Mine drawing and mapping	20	Choice of mining methods	5
Explosives	5	Timbering	5
Mining methods	10	Pumping, hoisting, haulage	12
Mining machines	5	Mine management	12
Timbering	10	Surveying	40
Total	148		147

The figures in Table I are minimums, and men who desire to spend more time in obtaining greater proficiency in certain lines will be given the opportunity. Night study will be expected. The Bureau of Mines safety car will be at the college to assist in the safety training work of the first week. Provision has been made for training teachers, and a special certificate will be given to those qualifying for this work.

The school has a 300-ft. tunnel with three steel mining fans of different types, a Clifford lamp-testing gallery, the most complete safety-lamp exhibit in the world, a smoke room, oxygen apparatus and gas detectors, mine and breaker models, an air compressor and a great variety of drills. Any man may enroll who has had at least one year in practical work in or around the mines. On completion of the five weeks' course a certificate will be awarded showing subjects studied and another will be given to those who have attended the full course for two years.

Lodging costs from $2 to $3.50 per week and board from $6.50 to $7. The location of State College, in a beautiful country town 1,200 ft. above sea level, where the air is cool and bracing, makes the opportunity attractive. Studying is a pleasure under such conditions, and the trip will prove to be a vacation rather than an unpleasant duty.

E. A. Holbrook, dean of the school, was for many years a leading official in the Bureau of Mines and for a while acting director. Apply to him and make all arrangements. At the close of the course the state will hold examinations for mine foremen and firebosses, July 27 and 28, at Tyrone, Pa., and at some point in the anthracite region.

A summer mining school will be held also by the Carnegie Institute of Technology, Pittsburgh, Pa., June 25 to July 20. This will be a single course only. The classes in the morning will be held in the Institute, when the subjects will be mine laws and regulations, mine ventilation, mine gases, safety lamps, methods of working, mine explosives, mine timbering and mine haulage. The afternoon classes will be held at the U. S. Bureau of Mines, the subjects being mine-rescue and first-aid training and mine safety. Demonstrations will be given at the Experimental Mine to exhibit the action of coal dust and the use of permissible explosives.

The fee for the course is $12. Students can live at home or obtain a room in a dormitory of the Institute for $2.50 a week, meals being purchased at restaurants close by. More information may be obtained by addressing the Supervisor, Co-operative Department of Mining Engineering, Carnegie Institute of Technology, Pittsburgh, Pa. Only twenty-five men will be accepted. The Institute will award certificates, as also will the U. S. Bureau of Mines, each in its respective field.

The department of mining of West Virginia University, Morgantown, W. Va., which limped along with a beggarly three students in its summer course of 1913, 1914 and 1915, which had only eight students in 1916 and fell back again with a dull thud to four in 1917, has in recent years received all manner of support, reaching to 106 students in 1921 and 69 students in 1922, and in 1918, 1919 and 1920, 23, 57 and 68 respectively. A. C. Callen is particularly well fitted for the matter in hand, having a remarkable enthusiasm for this kind of service. This course lasts six weeks, from June 11 to July 21.

At the close of the course the State Mining Department will conduct an examination for mine foremen and firebosses. The subjects are mining arithmetic, explosives, methods of working, timbering, mine gases, electricity in mines, drainage and pumping, mine ventilation, haulage, mine fires and explosions, first aid,

mine management, mining machinery, drawing, safety lamps and mine-rescue work. The instruction in first aid to the injured and mine-rescue training will be in charge of the West Virginia Department of Mines, and under the personal direction of Robert Lilly. No more than twenty-four men will be in a section, consequently each man will receive all necessary attention. The tuition is free. Books and supplies will cost less than $2, and board and lodging will be about $8.50 per week.

There are no entrance requirements or residence rules. Anyone engaged in mining who can read and write English and who really desires to advance himself in the industry will be welcomed. The course is given primarily for West Virginians, but arrangements will be made to take care of a few students from outside the state.

The staff of instruction comprises A. C. Callen and C. K. Brown, of Morgantown; Adam Crawford, of Fairmont; William Norris, Jr., of Welch; E. E. Criswell, of Beckley; L. C. Hutson, of Mount Hope; J. P. Madden, of Logan, and J. H. Haskell, of Montgomery. Further information may be obtained by addressing the Department of Mining Engineering, West Virginia University, Morgantown, W. Va.

The School of Mines of the College of Engineering of the University of Alabama, University, Ala., will hold a four-weeks summer course in mining, June 4 to June 30, which will give an exceptional opportunity to those who desire to pass state mine examinations. The subjects taught are listed in Table II.

TABLE II—FOUR WEEKS CURRICULUM, UNIVERSITY OF ALABAMA

Study	Hours
Alabama coal-mining law	18
Geology of coal and mining methods	18
Electricity, haulage, hoisting, pumping and mine machines	18
Practical mathematics	24
Drawing and study of mine maps	18
Mine gases, ventilation, fans, safety lamps and safety	18
Mine-rescue and first-aid course given by U. S. Bureau of Mines (optional)	20
Total	134

Special provision will be made for advanced work for those desiring to go further. A certificate will be given to each man showing the subjects taken and the credit received. The instruction is given without charge. Lodging at the university or in Tuscaloosa will cost about $2 per week. Board will cost from $5 to $6.25 per week. The U. S. Bureau of Mines, Southern Experiment Station, which is located at the university, will assist in the training. The university is only one mile from Tuscaloosa and can be reached by street car. H. D. Pallister, professor of mining engineering, is in charge of the courses and further information can be obtained from him.

At the University of Kentucky the short mining course is not given during the summer months but during the last half of the second semester of the regular college year. The course this year opened April 2 and will close May 26, lasting eight weeks. The number of men attending the course varies from year to year and ranges between 30 and 70, depending upon conditions prevailing in the coal field. The number attending this session is 30, but it usually runs between 40 and 50.

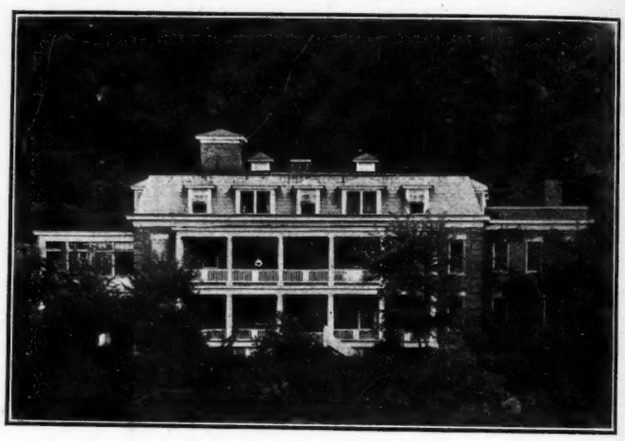
C. J. Norwood, head of the Department of Mines and Metallurgy and professor of mining, writes, "I am under the impression that the course given here for 'practical miners' was the first course of the kind established in any of the state universities or state colleges. It was established, at my request, by the board of trustees of the Agricultural and Mechanical College (now the University) of Kentucky in 1907, at a time when mine foremen did not have to be certified in this state."

Like most of the others this is a free course. It grants a certificate to every man who takes the instruction. The studies are arithmetic, mine layout, blasting, timbering, shaft and slope sinking, ventilation, drainage, mine gases, safety lamps and testing, explosions, mine fires, rescue and relief, surveying and map drawing and Kentucky mining law.

It may be added that the School of Mines of the University of Pittsburgh, not desiring to enter into competition with or duplicate the work of the Carnegie Institute of Technology, does not hold a summer school.

Building a Town for a Mountain Community

G. W. HAY, general manager of the Consolidation Coal Co., Elkhorn Division, at Jenkins, Ky., calls attention to the fact that two provisions for making the Elkhorn district self-sufficing were a hospital and a dairy, facilities that should not be overlooked in the creation of any group of mining villages. These items were omitted in an article entitled "Building a Town for a Mountain Community," in which were described the social developments at Jenkins and McRoberts. The



HOSPITAL OF CONSOLIDATION COAL CO., AT JENKINS

Set in the woods and facing, from spacious sun porches, Elkhorn Creek, the Elkhorn Hospital affords an opportunity for the early convalescence of the sickly or injured members of the Consolidation's villages in Kentucky.

illustration herewith shows the hospital. It serves not only for the care of the families of the mine workers but for the needs of others not in any way employed by the coal company.

About two miles from Jenkins along Elkhorn Creek is the dairy, which is operated by the Consolidation Coal Co. as a hygienic measure. The plant has 75 head of Holstein cattle which are regularly tested to ascertain if by any mischance they may have contracted tuberculosis. Milk has been found one of the grievous causes of morbidity among mine workers, and progressive companies following the Ellsworth Coal Co., are installing such dairies as a measure of protection.

IMMERSE AND SPRINKLE COAL TO PREPARE IT FOR MARKET.—At the Manchester and Saragossa strip pits, in Walker County, Alabama, the coal is dumped through a hopper into a washing pan, where it is immersed in water. This soaks off any fireclay that may be adhering to the coal. It is lifted out of this pan by two cast-iron screw conveyors. The coal is then screened and sprayed, thus improving its appearance and quality.

Clean Coal Is Broken Up and Screened Out, Leaving Rock and Bone as Oversize

MANY are of the belief that we are unduly complicating the work of cleaning coal by the use of too many screens, jigs, tables, elevators, settling tanks and dewatering devices. Every week we are hearing of new links in the chain of contrivances and attempts have been made to reduce the long chain by a short-cut method which avoids the use of water and is applicable to certain kinds of mine product where the bone, and of course the slate, is less friable than the coal. One of the most attractive of these simple and dry methods for cleaning bituminous coal is that devised by W. S. Ayres, a consulting mining and mechanical engineer of Hazleton, Pa. It eliminates all fine crushing and the greater part of the screening necessary in other processes.

It is designed to treat that class of bituminous product in which the impurities (bone, slate and rock) are tough and less friable than the coal. This condition is particularly true of many West Virginia coals.

The machine consists of a long cylinder into which the coal is fed, which is so designed, equipped and adjusted that the coal is disintegrated, the impurities remaining practically in the same condition as when fed to the machine. Its capacity as thus far tested is 8½ to 10 tons per hour.

When the slack in the run-of--mine without any treatment is clean enough for making coke, the process is very simple. The run-of-mine is first passed over a 2½-in. or 3-in. mesh screen. The product which passes through the screen is passed direct to the disintegrator. That passing over the 2½-in. or 3-in. mesh is fed to rolls which crush it to 3-in. mesh. This 3-in. product is then passed to the disintegrator. Where there is but little bone in the coal, and consequently but few pieces having fuel value in the refuse from the disintegrator, the tailings can be discarded without re-treating. Where the mine product contains much bone the tailing can be re-treated on the Ayres separator, originally designed for the treatment of anthracite, as shown in the illustration. This bone, or indurated coal, is too high in ash, as a rule, for coke, but it can be used for steam or domestic purposes.

Where the slack in the run-of-mine contains too much ash for use in the manufacture of coke, the disintegrator will reduce the usual equipment of tables and crushing machinery by removing the slate and rock, and by doing the greater part of the crushing before the coal is passed to the machinery for fine grinding.

A test made on a sample lot of West Virginia coal on the disintegrator-separator set, gave the following results: Coal recovered, 98.40 per cent, containing 7.05 per cent ash; coal lost in tailings, 1.60 per cent.

This process, which is covered by basic and combination patents, is entirely dry and is so simple that the machinery installed for its accomplishment occupies but little space, has a comparatively low first cost and can be operated without any attendant other than the oiler.

The separator consists of an apron conveyor set at an angle so steep that the coal which has the least frictional resistance refuses to travel upward with it. The slate having a greater frictional resistance or steeper angle of repose is readily carried upward and discharged at the head of the conveyor. When used in conjunction with the disintegrator only the bone is fed to it which has been more or less rounded by the tumbling in that cylindrical screen. The good bone being more perfectly rounded is disposed to roll to the bottom of the incline, where it can be gathered and used for such purposes as do not need exceptionally clean coal or at places so near the point of operation that the freightage cost of the impurity is not sufficiently great to make the presence of the bone particularly undesirable.

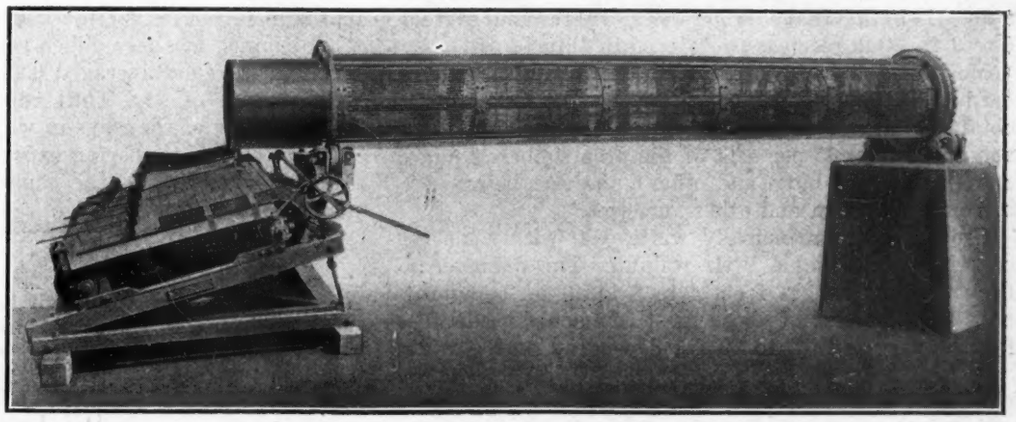
Thus the separator and disintegrator operate on two distinct principles. One depends on the difference in the angle of repose of the pure and impure product and the other on the greater friability of pure coal as contrasted with the strength and cohesion of such associated material as contains a large percentage of ash. Neither is dependent on specific gravity, as are dry and wet tables, jigs, rheolaveurs, Chance separators and similar contrivances, nor on surface tension, as are oil-flotation devices.

Mining Courses by Radio to Be Given by Pennsylvania State College

ENGINEERING extension courses by radio may be established at the Pennsylvania State College, Dean Sackett, of the School of Engineering, said last week. The department already reaches 9,000 industrial employees each year with class and home-study courses.

The Dean announced, "We may find it possible to have the necessary lesson charts and diagrams sent in advance by mail to the radio enrolment, and then the college classrooms can be taken into the shop or home for the benefit of the men who cannot go to college.

It is possible that the day is not far distant when these men and the hundreds of miners in similar classes conducted by the College School of Mines will be able to listen in on scheduled class instruction from the college broadcasting station.



Separator and Disintegrator

The disintegrator on the right breaks the clean coal and screens it out. The separator on the left lifts the slate and silicious pieces and allows the rounded pieces of banded coal—bone to roll to the base of the table, making a second or middlings product for use in steam raising.

Cost of Timber in Illinois Between One And Sixteen Cents per Ton Mined

HARRY E. TUFFT has made an inquiry into the kind and cost of timber used in the mines of Illinois as part of a study to be made by the U. S. Bureau of Mines with the co-operation of the U. S. Forest Service, the purpose being to ascertain ultimately what economies could be effected by better selection, preparation and storage of timber and especially to ascertain how the life of timber may be prolonged by the use of preservatives.

He finds that the cost of timber in the longwall mines of northern Illinois varies greatly from mine to mine. In 1914* the average total cost of timbering in eleven mines was stated as 5 to 8c. per ton of coal produced. The props are usually 3½ to 4 in. in diameter at the small end. The cost of props in 1914 was 0.5 to 1c. per lineal foot. Costs for average sizes of crossbars delivered to the mine were as follows: 6-ft. bar, 8-in. diameter (average), 15c.; 7-ft. bar, 8 in. diameter, 16c.; 10-ft. bar, 10 in. diameter, $1.25; 14-ft. bar, 12 in. thick, $1.90.

The costs of mine timber in 1921 delivered to the mine in this district were stated by one of the large operators as follows: Mine props, 4½ ft. long, 4½ in. small end, 5¾ to 6c.; a 6-ft. prop costs 7½c., a 7-ft. timber, 25c., and an 8-ft. timber, 35c. The average cost for props and mine ties at this company's mines in 1921 was 15.36c. per ton of coal mined.

Cost for Timber Almost Doubled Since 1914

Thus it will be seen that the average cost for longwall props in this district has advanced from 0.75c. per lineal foot in 1914 to 1.25c. per lineal foot in 1921, and that a 7-ft. timber costing 16c. in 1914 now costs 25c. It also will be observed that the maximum cost given in 1914 is 8c. per ton of coal mined, whereas the cost at the mine above mentioned is now 15.36c. for the same unit of output.

The timber used in the coal mines of Illinois is practically all of mixed hardwoods, little soft wood being used. In the room-and-pillar mines both round and split props are commonly used, although some operators prefer round props, as these are said to give better service than those that have been split from a log, especially in the smaller sizes. In the timber specifications of the different companies much variation is found as to the acceptable minimum diameter of props and crossbars. Some companies accept props containing only 4 to 5 sq.in. of wood in the small end, the actual diameter ranging from 2½ to 3 in. Others specify a minimum diameter of 4 in., and a few require a diameter of 5 in. Lengths range from 4½ to 10 ft. and average 6 to 8 ft. Oak receives preference in Illinois.

Most of the operators use practically any kind of hardwood timber for props, but a few endeavor to obtain as large a percentage of oak as possible. Probably more than 65 per cent of the prop timber is mixed oak (red, white, burr, and other), the rest being sycamore, hickory, elm and other varieties.

Crossbars are principally white oak, with some red oak, burr oak, and a little walnut. The diameter at the small end ranges from 4 to 8 in., 6 in. being perhaps the diameter of those most commonly used. The lengths vary from 8 to 20 ft., depending on the width of the opening to be supported. Most operators use only white oak for mine ties, although many accept any kind of hardwood.

Much of the mine timber used in Illinois mines is shipped from outside the state, chiefly from Missouri. In some of the mining districts the local supply of timber obtainable for mine use is limited in quantity and of inferior quality. The cost at the mine varies, according to the length of haul and minimum diameter that the operator will accept, from 16c. for a locally grown 7-ft. prop with 2½-in. tip to 28c. for a Missouri white-oak prop of the same length and measuring 5 in. in diameter at the small end.

The average cost in 1921 for mine props in lengths ranging from 4½ to 9 ft. and measuring 4 to 5 in. in diameter for various mines throughout the Illinois districts is compared in Table I, with the average price for 4½-in. props in one of the Illinois districts, as published in a report issued in 1915 by the University of Illinois.†

From this table it will be observed that the cost of props has increased greatly in the past seven years. Comparative figures for mine ties and crossbars are not available, but individual comparisons indicate a corresponding increase.

TABLE I – AVERAGE COST OF MINE PROPS IN ILLINOIS (DELIVERED)

Length Ft.	Cents per Prop 1914†	1921	Length, Ft.	Cents per Prop 1914†	1921
4½	4½	8	6½	13	17
5	5	10	7	17	24
5½	6½	12	8	25	30
6	10	15	9	30	35

TABLE II—AVERAGE COST OF TIMBER-SET MATERIAL AND MINE TIES (DELIVERED)

	Length, Ft.	Diameters, Small End, In.	Price in 1921
Round oak post	6	6	$0.45
Oak crossbar	10	6	.75
Oak crossbar	10	8	.85
Oak crossbar	16	6	1.50
Oak crossbar	16	10	2.60
Oak crossbar	20	6	2.00
Mine ties, length, 5 ft. 3x4 in. cross-section			.22
Mine ties, length, 5½ 6x6 in. cross-section			.42

In 1905 the average cost of round timber was 6c. per cubic foot in Illinois. In 1921 the cost of round mine timber delivered to the mine ranged from 17c. per cubic foot upward for a number of representative mines in different districts. From this it is seen that the cost of mine timber in Illinois has increased three-fold since 1905.

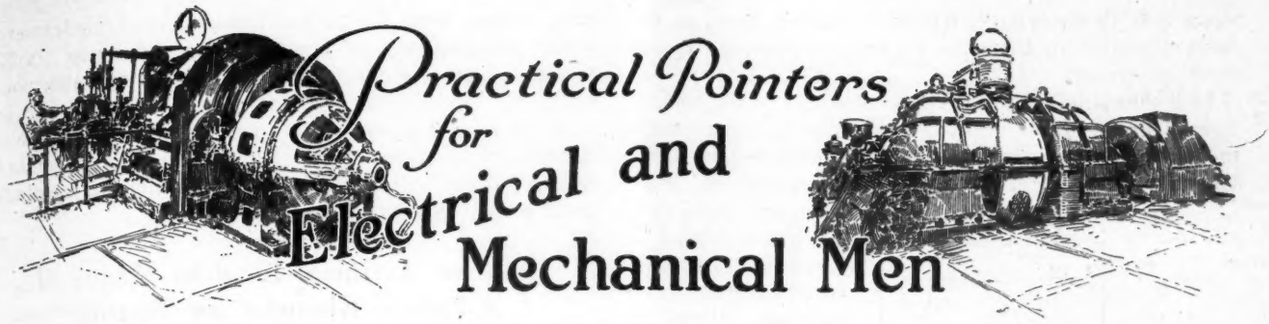
In 1921 the cost for prop timber delivered to the mine in twelve mines in southern Illinois was 0.9 to 3.6c. per ton of coal hoisted, and averaged 1.9c. per ton. The cost per ton of coal mined for all mine timber used underground delivered to the pit mouth ranges from 3 to 10½c. for thirty operators producing about 22,000,000 tons annually in different districts, the average being approximately 4.7c. per ton. The consumption per ton of coal mined at these mines ranged from 0.09 to 0.39 cu.ft. per ton, and averaged 0.23 cu.ft.

The report of Mr. Tufft concludes with the statement that one of the ways in which coal-mine operators can reduce their timbering expenses is by treating with a proper preservative the timber to be placed in the more permanent openings.

A GROUP OF FINANCIERS in which the Stinnes interests are prominent is reported to be acquiring participations in upper Silesia iron and coal properties, the first step being the purchase of a large block of shares in the Bismarck works.

*Bulletin 5, *Illinois Coal-Mining Investigations*, "Mining Practice in District 1 (Longwall)," July, 1914, pp. 34-35.

†Andros, S. O., Coal-mining Practice in District IV, Bulletin 12 Illinois Coal Mining Investigations 1915, p. 43.



Demand for a Knowledge of Electricity and Its Application to Mining

THE rapid progress and the growing application of electricity to coal mining has brought about a condition which demands that almost everyone working in or about the mines know a little at least about the theory and application of electricity. In fact it is highly desirable that all those in charge of mining operations know a great deal about electricity that they may be able to direct their workers and their personal efforts to better advantage.

With this expansion of electrical application has come an increased demand for more electrical data and information like that which *Coal Age* has been supplying, but there has also come a demand for some more general explanation of the fundamental principles of electricity, such as may readily be understood by the average practical man about the mines. To further increase the service *Coal Age* gives the industry there will appear from time to time short articles explaining the fundamentals of electricity and its application to coal mining.

What is Voltage and Current

The word voltage is one of the most common terms used in electrical literature and it is therefore essential that we have a clear conception of what is meant by the word. Instead of the word voltage the term pressure frequently is used, meaning the same thing.

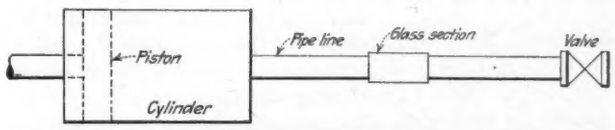
Voltage means electrical pressure and is quite similar to the idea of pressure as used when considering the pressure of the water in a water line. A pump exerts a certain pressure on the water in the pipe line and this pushing effort exerted, say by the plunger of the pump, is transmitted to the water.

Let us suppose we have a cylinder and piston filled with water and connected to a pipe line, with a valve on the end of the pipe as shown in the accompanying figure. If the piston is pushed from left to right there will be created and transmitted to the water a pressure. Should the valve be closed the pressure would still be exerted upon the water but there would be no flow of water; should the valve be opened the pressure would still exist but it would be in use and moving the water in the pipe line. Note that the pressure exists whether or not the water is still or in motion.

Electrical pressure, or voltage, is quite similar to the above. Voltage is electrical pressure which is created and may exist in a conductor or wire ready to cause a current to flow or it may be causing a current to flow. We should note that voltage, like pressure on the water, may exist either when not causing an actual flow or when causing a flow.

If the pressure exerted on the piston is allowed to push the water, the valve being opened, we say that there is a flow of water in the pipe line, similarly, if certain conditions are brought about where we have a voltage, or electrical pressure, on a wire a flow will be created called a current.

In our water analogy with the pump, the flow may be measured in gallons per minute. It is not necessary to determine the rate of flow by measuring the water coming out of the valve at the end of the line because a meter may be inserted anywhere in the pipe line and used to measure the rate of flow. We may even put a glass section of pipe in the line and actually see the water passing through the pipe line. When we see the glass tube full of water we say the rate of flow of water is high and obviously when the tube is not so full we say that the rate of flow is low.



CREATION OF PRESSURE IN A PUMP SYSTEM ANALOGOUS TO CREATION OF VOLTAGE

If the valve in the illustration is closed and the piston is forced from left to right, the water in the pipe will be under pressure although the water is not flowing out of the pipe. If the valve is opened the pressure will be used in forcing water through the pipe. This is similar in the first instance to voltage on an electrical system without current flowing; while in the second instance the electrical pressure or voltage would be producing a flow of current, the rate of which may be measured in amperes.

In measuring the rate of flow of water in a pipe line we usually say that the rate is a certain number of gallons per minute.

When an electrical pressure is used to cause a flow we say a current is flowing, similar to water; but in measuring the rate of flow in the wire we usually use the unit called the ampere. Therefore, the rate of flow of the current in an electrical conductor is expressed as a certain number of amperes.

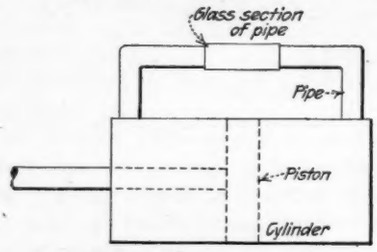
The Difference Between Alternating And Direct Current

THERE are two important different kinds of voltages used around the coal mines, one called direct-current voltage and the other called alternating current voltage. These two terms actually mean that the first named kind of voltage will cause to flow a direct current while the other kind will cause to flow an alternating current.

By direct current we mean current which whenever it is flowing will flow continuously in the same direction in a given wire. This is again similar to a pump line. Whenever a pump is operated, the flow through the column line always is in a direction away from the

pump. With electricity, whenever current flows in the same direction in the wire we are considering, we call it direct current.

In a pumping system the flow of water in the column line always is up or unidirectional, due to the arrangement of the valves, regardless of the direction in which the piston or plunger in the pump may be moved. Such a unidirectional flow is similar to what is termed direct current in electrical language. Moving the piston to and fro in the cylinder shown at left will produce a flow of water which will alternately be moved first in one direction and then in the other, that is, if we look at the water flowing through the glass section of the pipe the flow of water will be alternating from one direction to the other as the piston is moved backward and forward. Such an alternating flow is called alternating current, in electrical language. Note that the motion of the piston creates an alternating pressure and it is necessary to have this alternating pressure to produce an alternating flow of water in the pipe section. Similarly, an alternating voltage is necessary to produce an alternating current.



ILLUSTRATING ALTERNATING CURRENT

Working the piston forward in the cylinder would force the water that was in front of the piston up through the pipe connection and back into the cylinder behind the piston; reversing the stroke would cause the circulation of water to reverse in direction. If the piston were operated to and fro continually, the alternations of the direction of the water through the pipe would give a good example of the flow of alternating current in an electrical conductor. One hundred and twenty such alternations of flow are made each second in a 60-cycle alternating current system.

The Open Delta Connection

WHERE continuity of service is of great importance to an operation it is frequently common practice to install a bank of transformers of excess capacity and connect them in delta. When one transformer burns out or becomes disabled the service may still be maintained by operating the remaining transformers in what is known as "open delta."

The "open-delta" connection is similar to the "delta" connection, previously explained, except that one transformer is left out. This connection is also sometimes called the "V" connection because the delta connection and diagram represents a V when one transformer is omitted.

An important point in considering the "V" connection is that there will be available for load under this connection only 87 per cent of the capacity rating of the transformers, or in case the connection was originally delta the remaining capacity of the bank after one transformer has been eliminated is only 58 per cent of the original capacity. For example, assume each transformer of a delta bank to have a capacity of 50 kva.; the bank will then deliver 150 kva. When two of these same transformers are operating in "open delta" the capacity will be $50 \times 2 \times 87$ per cent = 87 kva., the "V" connection capacity; 87 kva. $\div$ 150 = 58 per cent of original capacity.

In localities where repairs cannot be made hurriedly and where the breakdown of a transformer would result in serious consequences this scheme is used. However, to keep down the no-load losses of the transformers where overcapacity is arranged for the extra transformer is left disconnected and the bank operates normally on "open delta." Some means, however, should be made for keeping the spare transformer in good condition and always ready for service. An important factor in this connection is the prevention of moisture getting into the transformer and oil.

Data for Artificial Load by Means of A Liquid Rheostat for Testing

IN RUNNING load tests on new or repaired electrical equipment it is sometimes impossible to use the normal operating load for this purpose because of inability to regulate and control the load properly. In this case recourse must be made to some form of artificial load which can be easily controlled and regulated to suit the requirements of the test. For this purpose there are several methods, some of which are highly efficient and others which dissipate the energy in heat.

In the first class are feed back systems. In this system the machine to be tested usually is operated as a motor and is connected to a generator which is driven by the motor under test; the generator in turn is connected so that it feeds back in the system that drives the motor and thus the power cost of the test is represented by the losses in the two machines.

A more common form of artificial load is the liquid rheostat made up of an electrolyte of either an acid or a salt. The acid electrolyte is frequently a solution of sulphuric acid and the salt electrolyte is commonly made from ordinary table or rock salt and water.

The resistance of ordinary hydrant water per square foot cross section and foot in length is approximately 100 ohms. This is a very high resistance and it is therefore necessary to make an acid or salt solution to reduce it to within a practical range for the test.

The following information will be found useful in making up a solution for a liquid rheostat.

When diluted with commercial sulphuric acid the resistance will be as follows:

Per Cent Acid by Weight	Resistance in Ohms
0.174	4.12
0.435	1.75
0.724	1.10
0.985	0.85

When diluted with commercial table salt the resistance will be as follows:

Per Cent Salt by Weight	Resistance in Ohms
0.23	7.84
0.46	4.65
0.70	3.12
0.93	2.38
1.16	1.90
1.39	1.48

In the barrel-type rheostat where the solution is not agitated and cooled there should be from 600 to 1,000 cu.in. of solution per kilowatt absorbed. The plates of the electrodes should have an area of 1 sq. in. per ampere.

THE MOST SATISFACTORY SUBSTITUTE for coal is spring.—*Associate Editors* (Chicago).

"OUTPUT OF COAL NORMAL"—dispatch. But not the output for coal.—*Norfolk Virginian-Pilot.*

RUHR COAL PRODUCES MORE HEAT than any other fuel of which we know.—*Peoria Transcript.*

Problem of Electric Power Supply for the Coal Mine*

Difficulties in the Way of Adapting Old Plants to New Equipment—Important Economic Considerations in Planning Extensions—Apparent Power Costs and True Power Costs

BY A. L. JONES
District Engineer, General Electric Co., Denver, Col.

THE accepted form of power for the coal mines is electric power, and experience has shown us that we are still far distant from the day when further electrification will not be necessary. The executive of a mine which makes its own power is therefore wrestling almost continuously with the problems of his power plant. Either it is overloaded and must be enlarged and rebuilt or its operating costs are excessive, or it breaks down and limits coal output, or someone wants to sell new and improved machinery, until the manager almost hates the thought of such a restless part of his property. If he purchases power, every day a new use for it seems to be found.

In many ways this unrest is due to short-sighted policy toward the problem, and the tendency when the problem of extension has to be met to dispose of it in the cheapest way and without thought as to where the future is leading.

The day when each opening had its own boiler plant, steam hoist, steam driven fans, steam pumps, steam loaders, etc., seems to be far behind us. During the last fifteen years nearly every mine power house has doubled or trebled in capacity, or has been abandoned in favor of purchased power, resulting in greatly reduced labor and fuel costs. Power costs in such isolated plants which were once considered normal would be unthinkable today, in fact probably would cause bankruptcy.

PURCHASED POWER DECREASES COST PER TON

One property where the main power supply was by compressed air from steam-driven compressors, used under its boilers 8.35 per cent of all the coal mined. The cost of power was 12½c. per ton. Another property having four openings, each with its own boiler plant and usual equipment of steam hoists, pumps, etc., had a power cost of 10.3c. for each ton mined; and these were in the days when the present high prices for coal were not obtainable. Another property operating two mines mostly by steam used 11.1 per cent of the coal output under its own boilers and the power cost was 19.45c. for each ton mined. Each of these properties is now electrified and power costs are from 3 to 4c. per ton mined, and the fuel burned runs from 1 to 2 per cent of the output.

With the broadening market and high prices for slack coal and the high cost of labor in boiler and engine rooms, the cost of steam is reaching a high figure, and efforts must be made to keep this down by a more efficient steam production and by utilizing this steam in improved machinery that will increase the work done by each pound of coal burned. It must not be overlooked either that the plant that is very wasteful of fuel usually is an old one and probably far from being reliable. In a general way the more efficient the plant, the greater its reliability.

Ample and reliable power supply means ability to get out coal when there is a market. The increasing use of purchased power is largely due to changing conditions which are tending constantly to push up the cost of power, unless the most efficient machinery is used and large-scale production is possible. Better load factor and more efficient equipment permit the central station to sell power to mines cheaper than a small plant can produce it—if all the factors of fixed charges are given proper weight.

FREQUENT ADDITIONS TO PLANT ARE COSTLY

Few coal properties start with a full-grown plan of development or with sufficient capital to permit the installation of a power plant much ahead of their immediate requirements and each addition to the plant is only to care for some immediate and pressing requirement. A mine executive might think that this condition of having his power plant always in a state of change is a peculiar condition of his property or his industry, but such is not the case. The public-utility company with power generation its main business recognizes this condition and plans ahead as far as its finances will permit, thus eliminating many of the expensive changes which must be made to a growing mine power plant.

The most important factors in planning any changes in a power house are foresight and confidence that the power plant will subsequently be called upon for a greater output, and it is here that the central-station public utility has a marked advantage.

Assuming an existing power plant consisting of a number of non-condensing steam engines which are proving inadequate for the requirements, what is the best way to enlarge? Before the decision to increase the plant has been reached the margin of safety in spare units probably has been getting smaller and smaller, until during the day shift everything has to be operated. To take full advantage of progress in generating equipment and higher efficiency the new unit should be as big as the combined capacity of the installed engines and enough bigger to provide for the immediate future, the idea being to operate the new unit during the day shift and hold all old units as spares. The new unit naturally would be more economical in its use of steam and if 7,500 kw. or larger, serious consideration would be given to the question of condensing operation, which would use approximately half as much steam as with non-condensing operation, even if this involved the use of a spray pond or cooling tower.

It should also be recognized that the tendency is toward higher steam pressure and superheat and those factors should be incorporated in the new installation.

*Abstract of paper read before Rocky Mountain Coal Mining Institute.

The new equipment should be so located in the power house that the next move, which logically would be to supersede the old engines with still another turbine, would involve no conflicts and the units be so placed that the ultimate goal would be a well laid out power house with ample room both on the turbine floor and around the condensers.

The switchboard for the new turbine should be laid out not to match the old board but with an eye to the future, incorporating modern practice and having ample capacity in oil circuit breakers. The march of progress will wipe out the old board and the standard for the new panels should be raised to that of the future, not lowered to that of the past.

The spray pond would be laid out so that it could be extended as the plant grows, and runs of piping, headers, etc., all laid out to permit making additions in the future with minimum interruption to service. In other words in adding a turbine to the plant one should have in his mind's eye the exact location of still another unit and should make all arrangements accordingly. The practice of placing machinery in any hole that presents itself, without regard to symmetry or correlation with other apparatus, or with no ultimate plan in view, is criminal. Nothing tends to raise the morale of the power-plant operating force more than a well laid out and convenient power house, and high morale means better service, lower costs and high output.

Water Supply an Important Problem

A good supply of condensing water from some stream is the most important consideration in determining the location of the plant and might in many cases justify the location of the power plant miles away from the tipple, involving as this does handling of coal. A spray cooling pond at best is a mighty poor substitute for a running stream. Unfortunately, few coal mines are situated near flowing water and must resort to artificial cooling of the condensing water, so the plant can be located where it will best receive coal and otherwise serve the load. Provision for future growth may show that the existing power plant building is incapable of being extended, in which case the fact must be squarely faced and the first turbine installed on a site and in a building which will permit of the ultimate expansion.

Probably the boilers which supply the original generating equipment are small units, of low-pressure type, in which event it must be remembered from the start that when the plant reaches any considerable size such boilers will have to be superseded by larger units perhaps of different design. The logical working out of the problem would be to install one boiler large enough to supply the first turbine installed, holding the other boilers as spares. This new boiler would be set high and would be so placed that coal- and ash-handling machinery could be provided at a later date with minimum disturbance to service. This boiler, too, would be purchased with the idea that ultimately it would have to operate at much higher pressures. Such a boiler would be twice as high as the old units, and its height, alignment and position should be selected for the future, regardless of how it fits into the present situation. Unfortunately, in most stations tying on to the present layout seems to be the determining factor, regardless of the handicap under which the new equipment may be placed.

The design of a mine power house involves innumerable details, such as selection of jet or surface condensers, type of stoker best suited to the coal to be burned, method of treating feed water, etc. The executive should keep his mind sensitive to the fact that he is not installing one unit only, but is making a start and preparing the ground for future extensions.

The mine power plant operates under a great many handicaps; usually water is scarce and poor, good boiler water frequently having to be hauled or pumped long distances. Poor water in boilers means extremely heavy maintenance, shorter time between cleaning, inability to overload, etc. Cooling water for condensers usually has to be circulated through towers or spray ponds and recooled. While such a cooling device may be used it is at the expense of lower vacuum, scale, high pumping cost and extra cost of equipment.

Mine plants seldom can afford specially trained supervision and the labor obtainable frequently is not the best and is fixed at a high price.

The very existence of a mine plant seems to foster the idea throughout the property that power costs little or nothing and that there is no particular need to conserve it. One property presented a most glaring case of wasted power. This company's problem was to raise a relatively small quantity of water from the mine. A centrifugal pump of many stages was on hand which had been used on much higher head, but rather than get a new pump the runner was turned down so that the motor would not be overloaded, some cable was already installed which was too small, but it was used at the expense of a heavy voltage drop. The steam was made in inadequate boilers and the engines in the power house were practically junk. They drove a jack shaft, which in turn drove back to a generator.

Glaring Waste of Mine-Made Power

Investigation of the efficiency of this pumping showed the situation to be as follows: The engine took 410 b.hp. in steam, 108 hp. was lost between the engine and the terminals of the generator; 65 hp. was lost in the cable, 23½ hp. in the motor, 187 hp. in the pump and 26½ hydraulic hp. of useful work was done—410 hp. in steam to do 26½ hp. of work. This had gone on for years and had caused no comment, because power was thought to be cheap. This is the mine which used 11.1 per cent of its coal output under the boilers. Fortunately, cases as extreme as this are not common. Cheap power is not found around coal mines.

The generation of power is as specialized and distinct a business as that of mining coal, and industry in general is overwhelmingly abandoning its isolated plants and turning to purchased power. In many of the larger coal fields custom power is available and a considerable proportion of coal in such fields is mined by purchased power.

The cost of such power seems high to the mine manager, who may think of his power cost as made up of some slack coal and small payroll, whereas the power company knows all too well that dozens of other factors must be reckoned with, which over a term of years cost real money.

Power may or may not be available to all mining properties, and if it is available the wise executive will look at the long-range and over-all cost of this power, and if he does this he will have more sympathy with the rates charged for custom power.

Any haphazard program of power-plant expansion

costs money and the money stays in the plant, causing the accumulative cost to run into startling figures. All the early equipment is soon practically obsolete, and if not actually thrown out it is worth little more than scrap. The practice of charging 5 to 6 per cent per year for amortization on investment is far too low for a mining property, especially one which develops gradually and where the power plant has to keep pace with an expanding and changing property. Very little equipment for power-house use purchased twenty years ago can compare favorably in efficiency with modern equipment; some of it fell by the wayside in much shorter time than this. It would seem that charging 7 to 8 per cent yearly for the obsolescence of the machinery is not too much.

The public-utility man has the same problem, but with his diversified load and his confidence in future growth he is in a better position to look further ahead, installing larger units, so that his charges on this score, while heavy, are less by a considerable margin than those of the mine plant.

The rate of interest which must be paid on power-plant investment varies from time to time with the money market and the cost of raising this money. The public-utility company with its larger units and better load factor probably has less invested per kilowatt capacity than the mine plant, especially as the spare capacity is available for diversified load, whereas the mine plant naturally requires a larger proportion of idle capacity. Some authorities maintain that it is justifiable to charge against the power plant the profit which money invested in the power plant would have earned if invested in the coal-mining business. This is based on the assumption that there is a limit beyond which the business cannot economically borrow money or beyond which it is not advisable to do so. Few companies would consider an estimated profit of 5 per cent above the interest charges sufficient to undertake the hazard of the business. This may or may not be considered a valid argument. Taxes fall alike on the public utility and on the mine plant. Fixed charges against the mine plant might be taken somewhat as follows: Interest, 7 per cent, taxes and insurance, 2 per cent; amortization, 8 per cent, making a total of 17 per cent.

High Capital Investment in Mine Plant

The amount invested per kilowatt of capacity in the usual mine plant in relatively small units is bound to be high. Almost any mine plant will show an investment of about $150 per kilowatt including boiler plant, building, etc. Then too, this investment is not used to full capacity all the time. In fact few mine plants have as good a load factor as 50 per cent, 33⅓ per cent being nearer the average, and the annual load factor, taking into account idle days, usually is not better than 25 per cent. Load factor in this sense is defined as actual kilowatts produced per month, divided by 720 hours per month, multiplied by maximum 5-minute peak encountered—in other words, the ratio of the actual power produced to that which would have been produced had the plant operated every hour of the month at a rate equivalent to the 5-minute peak encountered.* Over the month or year this represents the use of only 25 per cent of the possibilities of the plant, but the fixed charges, labor charges, etc., are chargeable on the basis of 100 per cent operation.

Taking the fixed charges at 17 per cent and assuming $150 invested in the power plant for each kilowatt output, the fixed charges become

$$\frac{17 \text{ per cent}}{8{,}760 \text{ hours per year}} \times \$150 =$$

0.29c. per kilowatt produced. On the basis of 100 per cent load factor, with actually a 25 per cent annual load factor the charges become 1.16c. for each kilowatt turned out. Investigation of quite a number of situations will show that the fixed charges of a mine power plant will run about 1c. for each kilowatt produced. This must be added to the actual production cost for the true cost of the power. Generation costs in mine plants vary greatly due to the load factor, degree of efficiency, modernity of equipment, character of supervision, etc.

A good size plant having condensing turbines but difficult water conditions had an actual generating cost of 1.37c. per kilowatt-hour. The cost was distributed as follows: Coal, 29½ per cent; labor in boiler and turbine room, 26½ per cent; boiler and stoker maintenance and boiler changing, 24 per cent; water, 20 per cent. Another plant, somewhat larger, and with better water conditions, had a cost of 1.277c., divided as follows: Coal, 52.2 per cent; labor in boiler and turbine room, 27 per cent; boiler and stoker maintenance, 10.8 per cent; water, 10 per cent.

The above were 1916 costs; probably on the basis of today's coal and labor prices they would be double, or 2.74c. and 2.55c. respectively. To these costs should be added about 1c. for fixed charges, bringing the cost to 3.74c. and 3.55c. Modernizing and combining these two plants cut the cost considerably. From these facts we may venture to say that few coal-mining plants can produce power at less than 2c. per kilowatt including fixed charges.

The argument then is that power is not cheaply produced around a coal mine, that purchased power will in many places be a wiser plan than revamping an existing plant or continuing to use an obsolete one. The power companies penalize for poor load factor, but so does the mine power plant, both in operating economy and in fixed charges.

*Basing the load factor on a 5-minute maximum demand is hardly a fair basis, because it would be impractical to operate mine power-plant generating equipment continuously for 720 hours at the 5-minute maximum demand rate. However, intimate contact with thirty coal-mine operations shows that the yearly load-factor is approximately 25 per cent when based on the capacity of the generating equipment.—Editor.

Fill Prospect Drillholes with Concrete

By Carl Scholz
Vice-President and General Manager, Raleigh-Wyoming Coal Co., Charleston, W. Va.

DRILLHOLES put down for prospecting purposes should be filled with concrete as soon as completed to a height of, say, 50 or 60 ft. above the coal. This is of special importance where water occurs in the overlying strata. In developing the Glen Rogers mine a heavy influx of water occurred 450 ft. above the coal, and it readily will be seen that if a roadway were driven under such a borehole without its having been concreted, much material damage might be done.

When the hole is first made its walls are intact and no sediment has filled up the bore, but if the work of concreting is left till later it may not be easy to make so good a job. A borehole is of no further value after the core has been obtained, so nothing is gained by leaving the hole to fill with sediment and to cave, for such a policy will inevitably give trouble.

Problems of Operating Men

Edited by James T. Beard

What Happened to a Pile of Creosoted Timber

Story of an Eye Witness—Pile of Creosoted Mine Timber Fired by Spark from Locomotive—Water Failed to Extinguish Fire

HAVING been a reader of *Coal Age* since its first issue came off the press, more than a decade ago, I feel assured that its editor would not knowingly publish anything if the information conveyed would prove harmful or dangerous to life and property, in mining. It was this thought that has induced me to give the following brief account of an occurrence of which I was an eye witness. The story is in no way exaggerated and I can vouch for its truthfulness.

The incident is recalled to my mind by reading the editorial, "Is Creosoted Timber a Menace?" which appeared in *Coal Age*, Feb. 15, p. 284. The information given in that article tends to show that the creosote treatment of timber does not increase its inflammability. This conclusion is based on the report of a committee appointed by the Missouri, Kansas and Texas R.R. to study the effect of creosoting fence posts, in respect to its effect on their destructibility by fire.

Without questioning the report and conclusions of this committee, as given in the editorial, kindly permit me to recount what I saw take place when a pile of creosoted timber, which had just been delivered at our mine, was fired by a spark from a small locomotive operating on a track in the timber yard.

Story of an Eye Witness

At that time (1910), I was running a mine hoist, at one of the large shaft mines here in Nanticoke. The company had a creosoting plant at one of their other mines and had sent over two flat cars loaded with mine timber that had been treated with creosote. This had been unloaded just outside of the enginehouse door, only that morning.

When I came out in the evening, ready for the night-shift, I observed the small locomotive coming up the track. Just then a signal for lowering men called me to the throttle. The shaft was 700 ft. deep and a single trip of the cage required a minute and a quarter when hoisting and lowering men.

Returning to the doorway, a few moments later, what was my surprise to behold a volume of smoke coming from the pile of timber. Evidently, the fire had caught from a spark or hot coal falling from the engine. Without seeing it, one would hardly believe the volume of dense smoke that was given off from the burning pile. It resembled the discharge from two big locomotives pulling a heavy trip of cars up a mountain grade.

The alarm was quickly given, but water appeared to have no effect to extinguish the fire, which continued to smolder and burn until it had consumed the entire pile. I could not help but think what would have been the result had this timber been sent into the mine and the fire had taken place on the mine road.

The following morning, the mine superintendent was early on hand to view the place. I remarked to him that had the timber been ignited in the mine, not a man or animal inside of the burning section would have been able to escape through the dense volumes of smoke produced by the burning timber. He agreed with me and put himself on record then and there against the use of creosoted timber in the mine.

In closing, allow me to suggest that the use of the cement gun and the coating of mine timbers with "gunite" is of far greater practical value as a preservative of timber and is not a menace to the safety of the mine. I hope this brief account may be of some value in averting disaster.

W. A. Barrett.

Nanticoke, Pa.

Practical Working of Mining Law Requiring Exclusive Use of Locked Safety Lamps

Disputed authority of district inspector referred to Chief of Department of Mines, who appoints other inspectors as committee to investigate and report. Failure to agree then requires submission to Court.

SOME time ago the question was asked in *Coal Age:* "In what respect can our mining laws be improved?" The question did not meet the cordial response that one could hope it would evoke among mining men who read *Coal Age* every week. To my mind the subject is a matter of the gravest importance and should call for earnest thought.

Mining laws should not be like an old fiddle that can be made to play any tune at the will of the operator or mine owner. By way of illustration, let us assume that John Doe and Richard Roe are joint owners of a mine, which they have been operating in the past as an open-light mine.

Somewhat later in the development of the mine the district mine inspector, following one of his visits to the mine, reaches the conclusion that the safe operation of the place depends on the exclusive use of locked safety lamps. Naturally his decision does not meet with favor on the part of the owners, who defy his authority in the matter.

As required by the Bituminous Mine Law of Pennsylvania (Art. 10, sec. 1), the district inspector reports the matter to the Chief of the Department of Mines, and two or three other inspectors are appointed to investigate and report their finding within seven days after their appointment.

In the event that the mine owners still refuse to accept the conclusions of the committee of inspectors, the law allows another seven days in which the owners

are given the right to appeal to the Court of Quarter Sessions of the county. The Court must then appoint five practical, reputable and competent persons, two of whom shall be selected by the owners and two others by the Chief of the Department of Mines and a fifth chosen by the four already named, or by the Court after waiting five days.

A third seven days are allowed, by law, for the formation of this commission, who must examine said mine and report their findings to the Court within ten days. Even then the law provides for the filing of exceptions by the owners or by the Department of Mines within seven days more.

Here, let me ask, What may happen in the mine where dangerous conditions are alleged, and who would be responsible in the event of disaster? Does not the law make the mining staff look like a set of school boys? What does *Coal Age* and its readers think?

Parnassus, Pa. C. W. ATKINS.

Circulation in Safety Lamps

Heating of the gas-charged air within the lamp reduces the pressure in the combustion chamber and increases the velocity of the air entering the lamp.

PERMIT me to correct a misstatement made in the letter of Oscar H. Jones, *Coal Age*, March 22, p. 493, in which he criticizes my theory of the lengthening of the flame of a safety lamp exposed to a firedamp mixture. The misstatement to which I refer grows out of a misconception of the illustration I used to demonstrate my theory.

While seeming to have a clear conception of the theory of the effect of the heating of the air entering a safety lamp, my critic's idea of the conditions on which this theory is based is wrong, and it is this error that I wish to correct. The misconception lies in the difference between the effect of the heating of pure air and air that is charged with gas.

For the same volume of flame, or a given combustion surface, the heating of pure air produces a normal height of flame, in a safety lamp or any other lamp. The lighter methane mixture (firedamp), subjected to the same heating, of course, follows the same natural law. Consequently, there is a reduced pressure within the lamp when the air entering is charged with gas, as compared with the effect of the heating of normal air.

VELOCITY INCREASED BY REDUCED PRESSURE

Now, it is not my idea that this reduced pressure, in the vicinity of the flame, increases the upward pressure of the air entering the lamp as a fuel supply, as my friend's statement seems to imply; but that the reduced pressure within the lamp increases the velocity of the air entering the lamp when that air is charged with gas. I believe this is strictly in accordance with natural law, the greater the difference of pressure, the more rapid the flow of air resulting.

Exception was taken to my comparing a safety lamp with an ordinary house lamp. While the two lamps are different in construction and use, the principle of ventilation is precisely the same in each, and I used the illustration to demonstrate the fact that the same cause would produce the same effect on the flame, in each lamp, notwithstanding their different construction.

However, the following illustration will serve the same purpose and perhaps be more acceptable. For example, take a safety lamp, burning with an ordinary height of flame in the mine, and carry it into an underground office or shanty where the confined air is at a somewhat higher temperature. Set it on the table and allow it to remain there for a short time.

HEATED ATMOSPHERE CAUSES LAMP TO SMOKE

Observe the effect produced on the lamp flame now burning in the close heated atmosphere. The flame will soon expand to fill the lamp, soot the gauze and glass and, eventually, will be extinguished by reason of the obstruction of the circulation within the lamp chimney, owing to the deposition of carbon in the chimney, which blocks the discharge of air and gas from the lamp.

Let me ask, What is the cause of the elongation of the flame, in the instance just given, assuming there is a total absence of gas in the air entering the lamp? Is it the "reaching up" of the flame for oxygen, or the forcing up of the flame by the increased velocity of the air supply?

Let me suggest, in closing, if Mr. Jones will try the experiment with the house lamp, which I mentioned in my previous letter and which he objects, he will discover that the flame will become elongated before being extinguished, which was the fact I wished to illustrate.

Washington, D. C. I. C. PARFITT.

ANOTHER LETTER

Practical test shows entry of air through the gauze, as well as through the openings below the flame, in lamps designed on the Eloin principle.

REGARDING the question of whether air ever enters through the gauze chimney, in lamps provided with openings below the flame, permit me to say that the simplest method of deciding this question is to put the lamp to the practical test and observe the results. Nothing is more simple than to show by experiment the flow of the air current entering a lamp and the escape of the products of combustion.

For that purpose, allow me to suggest making this experiment on the surface, and choosing for that purpose any approved safety lamp provided with openings below the glass to admit the air to the combustion chamber. When this experiment is performed in a room on the surface, in broad daylight, and the flame of the lamp adjusted to a height suitable for safe working or for testing for gas, there is no difficulty in observing the circulation of the air currents within the lamp.

In making the test, the lamp should be arranged so that smoke will surround the top of the chimney. When this is done it will be observed that the smoke will enter through the gauze and much of it descend to the flame, while air enters through the lower opening.

SMOKE SHOWS COURSE OF CIRCULATION

In order to observe the discharge of the products of combustion, make another test in which the flame is raised to such a height that it smokes. The course of the ascending current is then shown by the smoke rising until it is discharged at the top of the lamp. Of course, when the test is made in the mine the gas-charged air burning in the lamp raises the temperature and greatly increases the volume of the products of combustion given off from the lamp.

In closing, I may state that, in 1912, two mine ex-

plosions occurred in this country that were attributed to modern double-gauze lamps burning naphtha. In one of these explosions, twelve lives were lost. It was stated that the lamp that failed was not properly assembled, the gasket over the glass cylinder having been found to be doubled, causing the lamp to leak at that point.

A second accident in which several men were burned was said to have resulted from the puller rod, which operates the striker when igniting the lamp, having been left out. I mention these incidents as showing that in each of these cases the firedamp mixture entered at the bottom of the lamp. FRANK PATTERSON.

Eldorado, Ill.

Inquiries Of General Interest

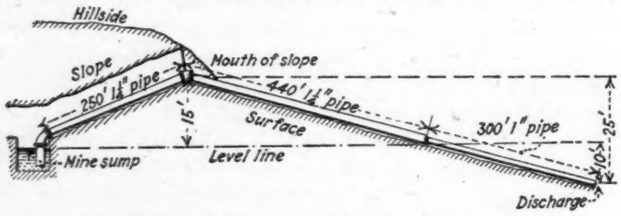
Siphon Problem in Mine Drainage

Flow of Water from Supply Basin Summit Must Equal Flow in Entire Length of Pipe Line, to Insure Continuous Operation of the Siphon

HAVING been an interested reader of *Coal Age*, for several years, and a student of the many practical problems answered in its columns, I take the liberty of asking the solution of a proposition regarding the siphoning of water in a mine. It is as follows:

We are operating a small coal mine that has been opened on a slope. The slope is 250 ft. long and falls, in that distance, 15 or 18 ft. At the foot of the slope we have arranged a sump to catch the water coming from the mine. We attempted to siphon this water out of the mine by laying a 1¼-in. pipe line up the slope and extending it down the hillside, on the surface, to a point considerably below the level of the water in the basin, in the mine.

As shown in the sketch I am sending, there are 250 ft. of 1¼-in. pipe, in the slope, in the mine, and 440 ft.



SHOWING PROFILE OF SIPHON PIPE LINE

of the same size pipe continued on the surface. Then follows 300 ft. of 1-in. pipe, making the entire length of the pipe line 990 ft.

The result is not satisfactory, as the flow through the pipe line is not sufficient to drain the sump, which overflows at times and then baling must be done and the water hauled out of the mine in a water car. The question I want to ask is, Should the smaller 1-in. pipe have been used on the suction end, instead of at the discharge end? Would making this change increase the flow of water in the siphon? D. L. REITZ.

Cairnbrook, Pa.

When using two sizes of pipe, in siphoning, the smaller pipe should always be laid at the discharge end, as in this case. The flow of water in the siphon would not be increased but rather decreased by making the change suggested by this correspondent.

We have made a few calculations to ascertain the probable flow in the pipe line, under the conditions shown in the accompanying figure, which represents the sketch offered by the correspondent, except that we have assumed the total fall, from the crown or summit of the siphon, at the mine entrance, to the point of discharge on the surface as, say 25 ft. Also, as indicated in the figure, we have taken the rise from the water level in the sump in the mine to the crown or summit as 15 ft. This makes the total assumed effective head producing the flow of water in the entire line of pipe 25 — 15 = 10 ft. Then, calling the respective diameters of the two sizes of pipe d_1 and d_2, the respective lengths l_1 and l_2, the effective head, in feet, H, and the flow of water, in gallons per minute, G, the flow of water in the pipe line is given by the formula,

$$G = \sqrt{\frac{800\,H\,(d_1 d_2)^5}{l_1 d_2^5 + l_2 d_1^5}}$$

Then, substituting the given values in this formula, we have for the required flow of water in the pipe, under the assumed conditions,

$$G = \sqrt{\frac{800 \times 10(1 \times 1\tfrac{1}{4})^5}{690 \times 1^5 + 300(1\tfrac{1}{4})^5}} = 3.9 \textit{ gal. per min.}$$

It is never safe to stop here and not ascertain whether the flow of water under the atmospheric head (34 ft., sea level), in the suction pipe, will be equal to or greater than the estimated flow for the entire pipe line, under the effective head (10 ft.). If the flow in the suction end should be less than the estimated flow in the pipe line, the siphon will tend to empty itself in a short time.

The rise on the suction end, in this case, being 15 ft., the effective head producing the flow of water in the suction end, under atmospheric pressure, is 34 — 15 = 19 ft. The length of the suction pipe being 250 ft. and its diameter 1¼ in., the flow of water from the sump to the crown or summit of the siphon is given by the formula,

$$G = \sqrt{\frac{800(34 - h)d^5}{l}} = \sqrt{\frac{800 \times 19(1\tfrac{1}{4})^5}{250}}$$

$$= 13.6 \textit{ gal per min.}$$

This shows that the flow in this pipe line will be continuous, since the flow in the suction end is greater than that in the discharge end of the pipe. These calculations are based on a total fall of 25 ft. from the summit to the discharge end of the pipe. The flow in the pipe line would be much increased by using 1¼-in. pipe throughout, as the small 1-in. pipe, at the discharge end, obstructs the flow. In that case, it might be necessary, however, to use 1½-in. pipe on the suction end, in order to prevent the siphon from emptying itself under the assumed conditions.

[A correspondent whose name is not attached to his letter, writing from Duquoin, Ill., asks: "If it is 8 ft. to the coal, which is 7 ft. thick and so situated that water will drain to the first opening, what kind of a siphon would be most practical to drain the mine?"

This is only a sample of many communications that come to *Coal Age*, in the expectation that an answer will be given, when the necessary data are lacking and there is nothing to show from whom the communication comes.

Another correspondent writing from Hawk Run, Pa., asks for "A little information on how to find the revolution of a fan that produced 30,000 cu.ft. of air. What is the horsepower, also the water gage?" We amplified this question to give an intelligent reply and explained (*Coal Age*, April 5, p. 570) that the speed of a fan, for a given air volume, depends on the water gage against which the fan must operate, as the same fan, running the the same speed will produce different quantities of air at different mines having different resisting powers (potentials).—EDITOR.]

Examination Questions Answered

Mine Managers' Examination, Springfield, Ill., Mar. 19, 1923

(Selected Questions)

QUESTION—*What precautions should be taken in blasting, to safeguard employees in mines that are dry and dusty and generate explosive gas?*

ANSWER—Only permissible explosives should be used in such mines. Where the miners are permitted to charge and fire their own shots, all holes should be examined by a competent person, and no hole should be charged or fired until it has been so examined and permission granted. Before the firing of a shot, the place should be examined for gas, such examination to be made by the mine examiner (fireboss), using an approved type of safety lamp for the purpose. In many cases, it will be safer to employ shotfirers to charge and fire all holes drilled by the miners and deemed safe in the judgment of the shotfirer. This work should be done after the men have left the mine for the day.

QUESTION—*In what season of the year and why are dangers from coal dust to be expected, and to what extent would you allow coal dust to accumulate or to be deposited before considering it dangerous?*

ANSWER—The danger from coal dust is greater in the winter season, for two reasons. First, the air current enters the mine at a temperature generally below that of the mine workings. In passing through the mine its temperature is raised and its capacity for absorbing moisture greatly increased. The moisture thus absorbed by the air current renders the mine dry and dusty and this action is greater in the winter than in the summer season. Second, owing to the increased demand for coal in the winter time, mine activities are increased and larger quantities of dust are produced in the mine workings.

No undue accumulations of dust should be permitted and every practicable effort should be made to prevent the deposition of dust on the timbers and walls in the mine passages and working places. Such accumulations of dust as cannot be avoided should be considered dangerous when the air current carries an appreciable amount of fine dust in suspension.

QUESTION—*What changes are met with in coal, roof and bottom when approaching faults and what dangers may be expected therefrom?*

ANSWER—In driving openings in proximity to faults, a good roof will often become dangerous from the presence of slips or fractures in the strata that make the extraction of the coal hazardous. The coal itself may be more friable and tender. Water or gas will often appear in increased quantities in proximity to a fault. The coal may thin out, the bottom rising or the roof bearing downward and almost squeezing out the coal. At other times, the coal seam is sheared off in a plane with little or no thinning out of the seam.

The dangers that attend the mining of coal, under these conditions, arise from the treacherous character of the roof and the presence of gas in increased quantity in places where open lights have been used and no warning has been given to employ safety lamps instead.

QUESTION—*What would be the horsepower on the air when 120,000 cu.ft. of air is passing per minute, under a water gage of 2.2 in.?*

ANSWER—A water gage of 2.2 in. corresponds to a pressure of $2.2 \times 5.2 = 11.44$ lb. per sq.ft. The horsepower on the air is then

$$H = (120{,}000 \times 11.44) \div 33{,}000 = 41.6 \text{ hp.}$$

QUESTION—*Would you recommend a fan or furnace for a new shaft mine 500 ft. deep? Give reasons for your recommendation.*

ANSWER—Assuming the mine is generating no gas, it will often be advisable to employ furnace ventilation, in the early development of the seam. The depth of a 500-ft. shaft will give a good air column and furnish ample ventilation in the mine, for a considerable time to come. However, in the later development of the mine, the safest plan will be to install a good ventilating fan and abolish the furnace. This is all the more important, because it is not known at what time the workings may generate gas; and furnace ventilation would be extremely dangerous in that event. Furnace ventilation can never be recommended if the seam generates gas, in *any* quantity, on being opened and its development started.

QUESTION—*What precautions are necessary in order to maintain a good current of air throughout the entire workings of a mine?*

ANSWER—First, equip the mine with a good ventilating fan capable of supplying the required quantity of air, against a specified water gage. Adopt a good plan of ventilation in which the main air current is divided one or more times, so as to provide a volume of air in each district of the mine that will comply with the mining law and keep the working places clear of gas. Keep all airways clear of obstructions and make all crosscuts and breakthroughs of equal cross-section with the airways. Erect the necessary doors, air bridges and stoppings to conduct the air forward and build brattices wherever required to make the air sweep the working face. All stoppings must be built in a substantial manner to prevent the leakage of air and special brattices must be provided to enable the current to sweep all falls and void places in the mine.

QUESTION—*What measures would you take to secure the best possible results from a fan, the capacity of which is limited and the demands on which approach dangerously close to that limit?*

ANSWER—Make every effort to reduce the mine resistance, by splitting the air current wherever its velocity will permit and good results are to be obtained; shorten the distance of air travel wherever practicable; clean up all airways, enlarge breakthroughs and remove every obstruction to the free passage of the air.

Says Herrin Acquittals Were Really Verdicts of Guilty Against Union

In a brief detailing the facts of the Herrin massacre and the two trials which failed to convict anyone for the twenty murders, counsel for the Bituminous Operators' Special Committee charged before the U. S. Coal Commission on May 17 "that the verdicts of acquittal for the individual defendants were in reality verdicts of guilty against the United Mine Workers of America."

The document charges, throughout, that the United Mine Workers, as an organization, planned and executed the crimes and by terrorism and the use of a special check-off tax approximating $900,000, together with community intimidation, prevented the guilty from being brought to justice. The entire affair, according to the brief, was in pursuance of "an avowed purpose of preventing any person not a member of the United Mine Workers of America from mining a ton of coal" during strike by the union and was designed to help starve the public into tolerating submission to the union's strike demands.

"What took place in Herrin was the logical and inevitable result of the establishment of this Mine Workers super-government in an American state. Such a result will inevitably follow its establishment in any other state just as soon as the aims and purposes of the super-government run afoul of the laws of that state."

Illinois Operators Oppose Severance Tax On Coal as Inequitable

The old, old battle is on in Illinois. Somebody is always trying to get the Legislature to levy a tax on coal at the mines to provide money for something. This year it is the state teachers' association asking that coal be taxed 8c. a ton. At a hearing in Chicago last week before the legislative committee the operators declared the tax would cut Illinois producers out of a good deal of business and would be unjust unless it applied uniformly over the whole country. The teachers' bill also would tax fluorspar $1 a ton and oil 5c. a barrel, and would be calculated to raise about $7,000,000 a year, which the teachers hope would be used to raise teachers' salaries and add to the income of state educational institutions.

A. J. Moorshead, president and general manager of the Madison Coal Corporation, said a severance tax would be inequitable as between Middle Western states' coal competition. Herman C. Perry, secretary of the Fifth and Ninth District Operators' Association estimated that a tax of even as much as 5c. a ton would reduce the Illinois output by 10,000,000 tons because very often a 5c. margin is enough to make or lose a sale. Thus, he argued, the tax would further reduce miners' working time and would work hardships in various places to counterbalance whatever benefits the school funds of the state would get. "You might as well tax bread as coal," he ended.

Dr. F. C. Honnold, of the Honnold Coal Bureau, of Chicago, said Illinois producers are already under a freight-rate and other handicaps in meeting competition from coals of surrounding states, including Kentucky, and that the addition of any further burden on Illinois coal would be hard to bear. He reminded the committee that the U. S. Coal Commission has asked that state legislatures defer action on coal legislation until the commission gets through its work. He revealed that Illinois operators already have spent $1,500,000 collecting data for the commission and hopes that nothing will happen to upset conditions in Illinois while the commission is making its investigation.

Says Autocratic Clique Runs Miners' Union

Most of the evils that afflict the anthracite industry could be eliminated "if the voice of the great majority of the rank and file of the miners can make itself felt through a more democratic management of the union," says a brief filed May 15 with the U. S. Coal Commission on behalf of the anthracite operators. The recommendation is made that "it should be unlawful to engage even in a general suspension, except after a two-thirds vote taken by secret ballot at the collieries under the supervision of the Department of Labor or some other public official."

The statement continues: "The United Mine Workers of America is not functioning fairly or democratically, either in respect to the public, the operators, or its own members. Union meetings usually are attended by only a small percentage of the total union membership, and this small attendance does not ordinarily include the most stable and steady miners, thus leaving the administration of union affairs with the more militant and noisy minority. The conduct of the meetings is such that freedom of expression and freedom to vote as one pleases are frequently denied those who desire to speak or vote against the less conservative clique or ring which manages the organization. . . .

"The result of these conditions, recognized and encouraged by the union constitution, is the autocratic conduct of union affairs by a small minority of the membership with a few union bosses."

Begin Hearings on Railroad Efficiency

The Interstate Commerce Commission began hearings May 16 on Docket 14556—Efficiency and economy of management of common carriers. A. H. Smith, president of the New York Central Lines, was the first to testify. His testimony was more or less of a historical nature, containing much statistics as to operation, net return on investment and other items.

Mr. Smith pointed out in his statement that in the decade 1910-1920 there was an increase of 157 per cent in the number of bituminous coal mines, while the increase in production was only 37 per cent.

He strongly advocated consolidation with the New York Central of the Ohio Central line, stating that it would enable the New York Central to compete better in service with other lines serving the smokeless coal fields of West Virginia, and also would help to stabilize the rate of return.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of April*

(In Net Tons)

Ports	Railroads	1923 Cargo	1923 Fuel	1923 Total	1922 Cargo	1922 Fuel	1922 Total	1921 Cargo	1921 Fuel	1921 Total
Toledo	Hocking Valley	112,013	3,622	115,635	202,729	5,824	208,553	253,024	6,610	259,634
	N. Y. C.-Ohio Central Lines	57,039	1,609	58,648	.....	.....	.....	47,754	1,408	49,162
	Baltimore & Ohio	83,308	2,334	85,642	251,346	4,567	255,913	106,530	2,537	109,067
Sandusky	Pennsylvania	84,589	2,271	86,860	176,364	4,883	181,247	32,552	1,109	33,661
Huron	Wheeling & Lake Erie	54,546	2,190	56,736	7,612	334	7,946	133,374	3,634	137,008
Lorain	Baltimore & Ohio	126,999	10,901	137,900	17,820	2,835	20,655	175,517	9,242	184,759
Cleveland	Pennsylvania	96,309	3,824	100,133	43,358	5,624	48,982	159,472	8,040	167,512
	Erie	74,251	4,602	78,853	.....	.....	.....	24,983	1,564	26,547
Fairport	Baltimore & Ohio	22,392	858	23,250	.....	.....	.....	.....	.....	.....
Ashtabula	New York Central	208,511	7,192	215,703	31,083	2,792	33,875	108,633	4,755	113,388
	Pennsylvania	29,444	902	30,346	28,342	1,688	30,030	97,831	4,017	101,848
Conneaut	Bessemer & Lake Erie	137,381	3,730	141,111	22,152	.....	22,152	40,393	292	40,685
Erie	Pennsylvania	18,292	3,440	21,732	21,835	3,65	25,200	62,709	3,180	65,889
Totals		1,105,074	47,475	1,152,549	802,641	31,912	834,553	1,242,772	46,388	1,289,160

*Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

C. E. Maurer Assails Assigned-Car Practice Before Railway Fuel Convention

The fifteenth annual meeting of the International Railway Fuel Association in Cleveland this week had several addresses and papers of particular interest to coal men. George Cushing presented a paper on the "Classification of Coals" in which he argued, if he did not demonstrate, that coals cannot be classified. C. E. Maurer, president of the Glens Run Coal Co., told the railroaders comprising the audience what havoc assigned cars play with the soft-coal industry. The delegates were scheduled to a welcome from T. K. Maher, the veteran Cleveland coal operator, and R. F. Grant, of M. A. Hanna, extended the welcome of the city.

The following is an abstract of Mr. Maurer's address:

"It does not require a salesman to make a fuel contract with a railroad at the present time. It requires the service of a shrewd purchaser. The coal salesman does not approach the purchasing agent of a railway company to sell the product of his mines. He comes to buy railway equipment with which to operate his properties. His aim is not so much to sell his commodity at a profit but to barter his coal for open-top cars.

"I used the term barter. The system could be designated by a more vicious and better descriptive term were it not for the fact that this system has been quasi legalized by the Interstate Commerce Commission, one of the many super-government bodies created, that assume the authority not only to execute, make, suspend and construe federal and state statutes but the highest law of the land, the Constitution itself.

"Railroads were given certain rights not enjoyed by individuals. They can, when necessary, confiscate not only private real estate but private personal property. They can dissect the old home farm or destroy the city mansion, because private interests must be submerged to the public good. In return, however, they are supposed at least to be operated for the public benefit. They are legally forbidden to discriminate between shippers and passengers: to make no distinction between the strong and the weak: to give the same consideration to the corporations with thousands as those with millions: and finally to provide—not trade—equipment for all who might desire service.

"Today the railroads in the great coal-producing states, in so far as the coal itself is concerned are operated (1) for the benefit of those who are willing to barter their fuel for equipment; (2) for those who are sufficiently fortunate as to own their own private railway cars, and lastly, the public gets what is left of motive power and open-top equipment.

"This condition exists because the Interstate Commerce Commission has so ordered. The railroads are only carrying out its orders. If I should dare to criticize them, it would only be for the part they have taken in helping to bring about this situation. While rightly decrying government interference and charging many of their ills to their inability to conduct their own affairs, they have not hesitated to solicit that same interference, when some temporary advantage might be gained thereby.

"The great transportation systems, combined with an abundance of cheap fuel, are the foundations upon which our national wealth and progress are built. We owe our enviable position among the earth's great powers to these more than all else combined. Yet each has been made the vehicle upon which designing politicians have attempted to ride into popular esteem.

"The interests of both are mutual. The coal mines with their thousands of acres of unmined coal are the railroads' greatest asset. While time and conditions may vary, neither the location of the coal nor the mines can be changed and years hence in a constant stream will furnish an almost fixed annual revenue, not only to the railroads of the coal fields proper but to all their connections.

"At the same time the railroads are necessary to the coal. To a great extent the values of coal properties are measured by the transportation system to which they are tributary. Bankrupt railroads mean valueless coal mines. It would seem, under the circumstances, that instead of antagonizing each other, these great industries, upon which the public is so absolutely dependent, could find some common ground upon which they could unite that in the end the public might well be served. If they cannot reconcile their differences they only invite others much less qualified and ever willing to assume the task.

"The burden is primarily ours. We may for a time rely upon some temporary advantage either may have gained by doubtful legal decisions of commissions or otherwise. In the end, however, if the public suffers thereby, drastic means will be found to correct these evils.

"The present car-distribution rules for coal mines, if not revised by the Interstate Commerce Commission by and with the consent of the railroads, will be corrected by federal enactment, in no uncertain terms. The attempt was made in the Esch-Cummins Law, one paragraph of which, referring exclusively to distribution of cars at coal mines, provided that all cars placed at coal mines should be counted and charged against the mines receiving them.

"This part of the law, however, has been made a parody of by the Interstate Commerce Commission. A statute intended to prevent has been construed to license discrimination. I presume that the railroads are still counting and charging against certain coal mines the cars furnished to keep them in continuous operation since the enactment of the law. This duty at least was imposed upon them.

Counter Charges of Operators and Roads

"The coal operators of the country during the last year have correctly charged their inability to furnish coal to the public to lack of railroad equipment. The railroads in reply have submitted reports showing that the coal mines were supplied with from 50 to 70 per cent of their capacity requirements. I have no cause to doubt the correctness of these reports. At the same time I do know that they were not only misleading but absolutely incorrect in so far as the great coal-consuming public were concerned. Had anything like even a 50-per cent car supply been equally distributed to all the mines there would have been an abundance of coal for all.

"The distribution was not equal, however. The mines enjoying railroad fuel contracts were first supplied with equipment. Mines having contracts with or owned by individuals or corporations able to control their own cars were next supplied. And lastly the mines supplying the general public were given the balance, if any existed, of motive power and equipment with which they might operate.

"In so far as I know, this small balance was not only equally distributed but the cars were carefully counted and charged against the mines receiving them. As a result the public has paid the bill, and will continue to pay as long as the practice is continued.

"You can easily understand what this system means to the coal mines that can only operate from one to two days per week, while adjoining properties are operated continuously. Men cannot be held; their entire organization is destroyed; their output when able to operate is cut down and their costs doubled.

"The system works untold hardships on the employees of the mines on whom we are dependent for our fuel. Homes cannot exist nor can children be clothed when the heads of the families find employment but from one to two days per week. Do you wonder that they clamor for more wages? I have no hesitancy in saying that the miners fortunate enough to be employed at the mines enjoying these special privileges where work is constant are overpaid. I am just as certain, however, that no reduction in wages will come until the railroads find a way, through car distribution, to give them equal employment.

"The men upon whom the public is dependent for its heat

and power and every comfort are entitled to at least a fair livelihood. Any method of distribution of the equipment of the public-service corporations upon which they must rely that prevents their equally sharing therein will be paid for in full by those who must use the product of their toil.

"For the time being the railroads may operate their motive power to haul private equipment while their own lies idle on sidings. They may furnish cars to run certain mines six days per week and others less than two. They may provide the means whereby a few miners may have continuous employment while thousands are deprived of an opportunity to earn an honest livelihood. They may make one corporation's coal mines valuable and its neighbor's valueless. They may make cheap fuel for the favored few and expensive fuel for the countless balance, but the situation existing during the last year and at the present time cannot continue for long.

"It must be apparent to every man connected with the coal roads that not only the coal operators and the miners but the general public are being deprived of their legal and equitable share of transportation; that were there no legal obligation on their part to serve all equally, their sense of equity and justice for which they appeal for themselves and their interests, would lead them to give the same consideration to others dependent on them without waiting for a higher authority to intervene.

"A short time ago an able address was made by one of the leading Railroad Presidents before one of our Civic Bodies. He laid particular stress upon the fact that transportation companies should not be required to own sufficient rolling stock and equipment to carry the peak loads that only came periodically and be charged with this surplus when conditions were normal. No one can challenge his position. Had he only added 'but when the peak load is on, this equipment must be equally distributed without fear or favor or among classified necessary industries.' No more could have been desired.

"You are the men in a position to determine whether this present method is necessary to your department; to judge if it tends to improve the relationship between the great coal-producing interests and the coal-carrying railroads.

"There is a more equitable and a better way. The cost of the production of coal is known. All the mines on your lines of railroad are your natural assets. Nothing would better tend to increase the friendly relation between their owners and yourselves than to meet these men, not part but by all, either directly or through their representatives. Meet them with your executives and the heads of your managing departments. Discuss with them the value and cost of the fuel which they produce. Fix a price for your fuel that will render to them at least a reasonable return for the product of their mines, and then give every man an equal opportunity, providing he is so situated as not to inconvenience you, to furnish you his proportion of your fuel requirements based upon what his mines are able to produce.

"Give them to understand that in consideration of their furnishing you fuel at a reasonable price, all cars upon your lines will be distributed equally among all the mines, and you will have done more to establish a feeling of good will between these men and your railroads than anything that I can suggest. Not only among them, but you will have given all the employees at the mines along your lines of railroad an equal opportunity of earning a livelihood, and will have placed the public and all dependent upon you for coal in an equal position with yourselves."

SPEAKERS' BUREAU OF SPECIAL COMMITTEE ANNOUNCES COAL TALKS.—Addresses on the coal problem from the operators' standpoint have been booked by the speakers' bureau of the Bituminous Operators' Special Committee as follows: Kansas Bankers' Association, Hutchinson May 24; Engineers' Club, Philadelphia, June 12; Michigan Bankers' Association, Detroit, June 18; National Association of Building Owners and Managers, Atlantic City, June 18. Invitations for speakers to represent the bituminous industry have been received from the following: Rotary Club of Cleveland; Mercator Club of Columbus; Kiwanis Club of Chicago; Exchange Club of Toledo; and the Jersey City Lodge, Foresters of America.

Forty-nine Companies Submit Bids on Coal for Government Fuel Yards

Forty-nine companies submitted bids to the U. S. Bureau of Mines for furnishing 200,000 tons, more or less, of bituminous coal to the Government Fuel Yards for the use of government departments during the period from June 1, 1923, to March 31, 1924. Offers were opened May 15 and details made public May 16. Of the total amount, 170,500 tons was on New River run-of-mine; 25,000 tons of Maryland, Pennsylvania or Northern West Virginia run-of-mine; 4,750 tons of New River nut and slack and 1,600 tons of gas coal. All quotations are on a gross ton basis, f.o.b. mines.

The following bids were submitted on Maryland, Pennsylvania and Northern West Virginia coal, run-of-mine: Rhodes Fuel Co., Uniontown, Pa., 5 cars daily, $2.75 per ton; Mostoller Coal Agency, Somerset, Pa., 20,000 tons at $2.25 per ton; Patton Coal Co., Fairmont, W. Va., 21,000 tons at $2.91 per ton; D. E. Williams & Co., Philadelphia, Pa., 40,000 tons at $3 per ton; Lynah & Read, Baltimore, 45,000 tons at $3.06 to Oct. 1, 1923, and $3.79, Oct. 1, 1923 to March 31, 1924; Madeira, Hill & Co., Philadelphia, Pa., 25,000 tons, $3.24 per ton to Oct. 1, 1923, and $3.64 per ton, Oct. 1, 1923, to March 31, 1924; D. E. Williams & Co., Philadelphia, 30,000 tons, $3.25 per ton; Lynah & Reed, Baltimore, 10,000 tons, $3.25 per ton; Lynah & Reed, Baltimore, 12,000 tons, $3.28 per ton to Oct. 1 1923 and $3.51, Oct. 1, 1923 to March 31, 1924; Matlack Coal & Iron Co., New York, N. Y., 50,000 tons, $3.34 per ton; Fidelity Coal Mining Co., Philadelphia, 21,000 tons, $3.34 per ton; Equitable Fuel Co., Baltimore, 5,000 tons, $3.35 per ton; Dexter & Carpenter, Inc., New York, 21,000 tons, $3.36 per ton, W. A. Merrill Sons & Co., Philadelphia, 21,000 tons, $3.36 per ton; Piedmont & Georges Creek Coal Co., Frostburg, Md., 75,000 tons, $3.36 per ton; Quemahoning Coal Co., Somerset, Pa., 60,000 tons, $3.36 per ton; Equitable Fuel Co., Baltimore, 50,000 tons, $3.42 per ton; Emmons Coal Mining Co., New York, 25,000 tons, $3.44 per ton; Maryland Coal & Coke Co., Philadelphia, 30,000 tons, $3.53 per ton; Davis Coal & Coke Co., Baltimore, 53,662 tons at $3.53 to Oct. 1, 1923, and 96,588 tons at $3.89 per ton, Oct. 1, 1923, to March 31, 1924; Ridge Hill Products Co., Philadelphia, 21,000 tons at $3.58 per ton; Equitable Fuel Co., Baltimore, Md., 5,000 tons, $3.63 per ton; Commercial Coal Mining Co., Philadelphia, 25,000 to 30,000 tons, $3.64 per ton; Brothers Valley Coal Co., New York, 50,000 tons, $3.64 per ton; D. E. Williams & Co., Philadelphia, 30,000 tons, $3.64 per ton; W. A. Marshall & Co., New York, 70,000 tons, $3.64 per ton; A. H. Powell & Co., Baltimore, 21,000 tons, $3.70 per ton; Price-Ryan Coal Co., Baltimore, 25,000 tons, $3.80 per ton; Quemahoning Coal Co., Somerset, Pa., 25,000 tons, $3.81 per ton; Pennsylvania Coal & Coke Corp., New York, 50,000 tons, $3.92 per ton; Dexter & Carpenter, Inc., New York, 21,000 tons, $4.06 per ton; Piedmont & Georges Creek Coal Co., Frostburg, Md., 60,000 tons, $4.20 per ton; Coleman & Company, Philadelphia, 10,000 tons, $4.20 per ton; W. H. Bradfort & Co., Inc., Philadelphia, 10,000 tons, $4.20 per ton; Eastern Fuel Co., Pittsburgh, Pa., 21,000 tons, $4.76 per ton; Equitable Fuel Co., Baltimore, 10,000 tons, $4.93 per ton; Consolidation Coal Co., Baltimore, Md., 4,000 tons, $7.30 along side dock.

The following bids were submitted on New River Coal, run-of-mine: Chesapeake & Potomac Fuel Co., Washington, D. C., 15,000 tons, $4.30 per ton; Equitable Fuel Co., Baltimore, 50,000 tons, $4.31 per ton; Fayette Smokeless Fuel Co., Mt. Hope, W. Va., 50,000 tons, $4.48 per ton; White Oak Coal Co., McDonald W. Va., 60,000 tons, $4.48 per ton; C. G. Blake Co., Cincinnati, Ohio, 5,000 tons monthly, price to be determined each month.

Nut and slack: White Oak Coal Co., McDonald, W. Va., 4,750 tons, $4.368 per ton; Maryland Coal & Coke Co., Philadelphia, 20,000 tons, $4.48 per ton.

Gas coal: Equitable Fuel Co., Baltimore, 1,600 tons, $2.74 per ton; Price-Ryan Coal Co., Baltimore, 1,600 tons, $2.97 per ton; Consolidation Coal Co., Baltimore, 1,600 tons, $3.08 per ton; Patton Coal Co., Fairmont, W. Va., 1,600 tons, $3.14 per ton; Matlack Coal & Iron Co., New York, 1,600 tons, $3.90 per ton.

National Chamber of Commerce Urges Consumers to Buy and Store Coal

Consumers are urged to purchase and store coal "as a matter of insurance, as a help in the transportation difficulty, and in order to assist in stabilizing the working time of the miners" by the Natural Resources Production Department of the Chamber of Commerce of the United States, of which W. DuB. Brookings, is manager, and C. T. Starr, chief of the Coal Bureau.

The bulletin issued by the development discusses the coal situation as of May 1 and declares that it is difficult to understand the apathy of the consumer in holding back his purchases in the light of past experience and in view of the present demand on transportation, including the car shortage, which shortage is expected to be accentuated by the usual heavy movement next autumn.

FRENCH AIMS IN THE RUHR would seem on the whole to be pretty good, if we are to judge from the way they have hit the mark.—*Manila Bulletin.*

A CANDIDATE NOWADAYS is a man who stands for what he thinks the people will fall for.—*Princeton Tiger.*

Louisville & Nashville Lease of C. C. & O. Insures Outlet to Sea for Eastern Kentucky Coal

The Louisville & Nashville R.R. has obtained a lease for 999 years of the Carolina, Clinchfield & Ohio R.R., according to an announcement on May 16 by W. L. Mapother, president of the L. & N. As the C. C. & O. forms a belt through the coal fields of West Virginia, Tennessee and North Carolina, and links up with direct connections with tidewater at Charleston, the lease is expected to play an important part in the development of coal fields in eastern Kentucky. The Atlantic Coast Line, it is understood, will be a joint lessee with the L. & N. and will assist in the financing.

It is the intention of the L. & N. at once to spend many millions of dollars in connecting trackage in eastern Kentucky. This will link up all the lines of the L. & N. with those of the C. C. & O. It will give eastern Kentucky coal an outlet to the sea and will at once develop thousands of acres of coal land which, it had been thought, might be idle and unproductive for a quarter of a century.

Not only will the main system of the L. & N. be extended to line up with the new property but scores of small lines will be built, radiating out through the undeveloped coal lands of southeastern Kentucky and Tennessee.

A meeting of the directors of the L. & N. has been called for New York for May 23. After the contract is approved the consent of the L. & N. stockholders will be obtained and then the Interstate Commerce Commission must act. As the Carolina, Clinchfield & Ohio is not a competing system no objection is expected from that quarter.

"The acquisition of the C., C. & O. by the L. & N. is one of the greatest things that has ever happened in the development of eastern Kentucky," is the comment of R. C. Tway, of the Tway Coal Co., which has large properties on the L. & N. near Harlan, Ky. "It means that the hundreds of coal operators along the lines of the L. & N., for the first time, have an outlet to tidewater.

"At present we are shut out of all Atlantic seaboard business because of the impossibility of getting rates that will enable us to sell coal in competition with operators from other districts. When we have an outlet over the line of the C., C. & O. to Charleston, we can sell coal on the coastwise trade at all ports from New England and Florida. We all will share in the gigantic coal business of New York City, Philadelphia and all the other great cities of the East.

"One of our greatest handicaps for some years has been traffic congestion. Our coal has to leave Kentucky through the gateways of Cincinnati and Louisville. These outlets have been so choked with coal traffic that it has greatly handicapped production. Not only that, but the coal from the Harlan fields has had to go through a single track neck of the L. & N., leading northward to Corbin. That has been the cause of much loss of business though the inability to operate when cars could not move."

George Otis Smith Outlines Matters That Coal Commission Is Asked to Consider

At a meeting of the New York section of the Mining and Metallurgical Society held at the Harvard Club in New York City, May 16, George Otis Smith, now of the U. S. Coal Commission, was the principal speaker, W. Y. Westervelt presiding.

In the course of his remarks Mr. Smith stated that the commission had, at least, the merit of being a sort of rough cross-section of the American people. One of the propositions presented to the commission was to advocate that a curb be placed on the excessive development of coal areas which could be operated profitably only by the granting of excessively low freight rates considered on a per-ton mile basis. He said that the Pittsburgh coal operators complained that their shipments to the Great Lakes in normal years had declined from over 50 per cent of the total coal shipments to about half that, this loss being to eastern Kentucky and southern West Virginia, where a freight rate was given which was only 25c. per ton more than that from the Pittsburgh district, but where the distance to be traversed was 300 miles further. Putting the tonnage thus transferred to the area mentioned at 5,000,000 tons, or 100,000 railroad cars annually, the Pittsburgh operators have reason to contend that thus 1,500,000,000 ton-miles of freight every year were moved needlessly. This movement required perhaps 6,000 cars.

The diversion of coal for the Twin Cities from the Lake route to all-rail would involve a loss of a billion ton-miles per annum and is thought by some even more undesirable because it would put an end to that highly valuable storage of about 10,000,000 tons at Duluth-Superior alone, which has given the mines summer operation. Less shortage of cars would be experienced if distances of transportation were reduced, but in the past every effort seems to have been made to lengthen the haul and to favor the opening of new and unneeded mines.

Despite the excess of mines and of men and the shortage of railroad equipment, action is even now being taken toward building new coal branches where such development is least needed. The "dilution of coal-car service" by spreading them over too many mines and too many miles of railroad was a difficulty which had made the railroads unable to meet the real needs of the coal industry.

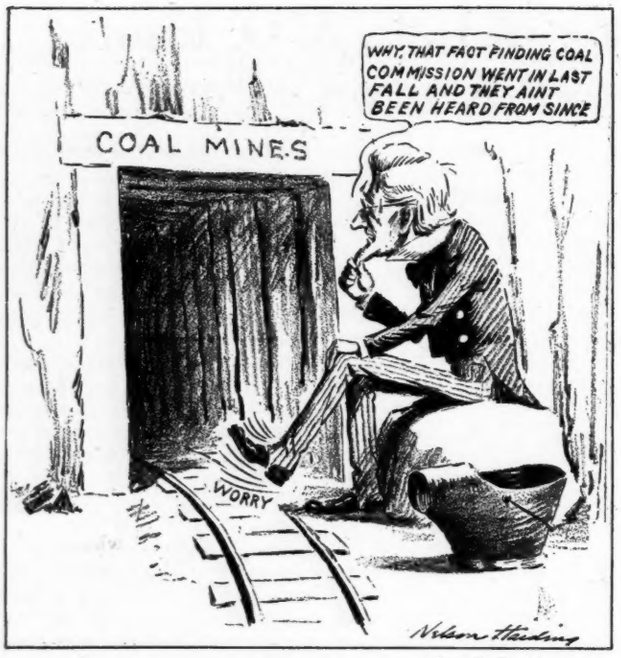
Another remedy proposed was to give mines an allotment of cars in proportion to the contracted coal. Mines having large contracts have found that, when business was briskest, the opening of new mines, which had preference because they were under development, reduced the number of cars available to mines having contracts. Thus one company which normally shipped 80 per cent of the coal going over a certain road received only 60 per cent of the cars when the market boomed, a host of small operations springing up to take advantage of the spot market. The companies that had made contracts with the coal companies were by failure to receive coal compelled to bargain for high-price spot fuel with those very operations which had made it impossible for them to get their contracts filled.

These references to transportation limitations were given as examples of the man-made handicaps under which the coal industry suffers and from which relief is sought.

Draft Program of Wholesalers' Convention

The tentative program for the convention of the American Wholesale Coal Association at Cincinnati calls for a meeting of the executive board of the association at the Hotel Gibson on the afternoon of June 11 to complete the preliminary plans. Wednesday morning, June 12, the official welcome will be extended by Julius Ratterman, chairman of the local committee, with a response from President Morton. Following this the reports of the secretary-treasurer, president and the traffic manager will be read. In the afternoon it is hoped to have Judge Alschuler, of Chicago, as the speaker, to be followed by a general discussion.

The annual dinner of the association will take place on the evening of June 12 with Charles L. Dearing, of Chicago, who is spoken of as the probable successor to the presidency, as the toastmaster. Edwin P. Morrow, Governor of Kentucky. will be the main figure on the program. Charles R. Moriarity, former president of the Cincinnati Coal Exchange, also will be on the program. On Thursday morning the election and installation of officers will take place Ladies who attend the convention will be taken on a motor sightseeing tour of the city on Wednesday afternoon; in the evening they will be welcomed at the annual dinner of the association and on Thursday morning they will be the guests of the official hostess of the Cincinnati Chamber of Commerce.


WHY, THAT FACT FINDING COAL COMMISSION WENT IN LAST FALL AND THEY AINT BEEN HEARD FROM SINCE
COAL MINES
WORRY
Nelson Harding

From the Brooklyn Eagle

Entombed?

Engineers Announce Personnel and Plans of Committee to Probe Coal Storage

Personnel and plans of the committee which is to direct a national investigation of the storage of coal in co-operation with the U. S. Coal Commission, the Department of Commerce and the Bureau of Mines have been announced by the Federated American Engineering Societies. The committee members are H. Foster Bain, Director of the U. S. Bureau of Mines, Washington; David Moffat Myers, former Fuel Administrator, New York; Perley F. Walker, dean of engineering, University of Kansas; W. H. Hoyt, chief engineer of the Duluth, Missabe & Northern Ry., Duluth, Minn.; S. W. Parr, professor of applied chemistry, University of Illinois; Edgar S. Nethercut, secretary of the Western Society of Engineers, Chicago; Roy V. Wright, editor, New York. The chairman is W. L. Abbott, chief operating engineer of the Commonwealth Edison Co. of Chicago.

The investigation, the first of its kind to be undertaken in this country, will deal with the whole range of problems affecting the storage of coal. Factors involved, according to the Federation's statement, comprise cost, embracing the question of financing and providing means whereby coal in storage may be used as collateral; amounts of coal consumed at different periods, particularly by industries; provision by industrial organizations to aid the workers of the nation in securing coal supplies during the summer at a low cost; methods of handling and storing; effects of storage on the heating value of coal; transportation facilities; allaying labor unrest, and reducing the number of mines and miners.

"There are factors about which there is a lack of definite information," the Federation statement says. "They relate largely to the economics of coal storage, involving such problems as cost and the quantity that should be stored before winter begins. There also is the question of financing the storage of coal and providing means whereby coal in storage may be used as collateral for financing.

"No one has specific knowledge of the amount of coal consumed per month, per year. All that is known is the quantity produced by months, and roughly the amount consumed, but this does not give sufficient information whereby one may specifically determine the amount consumed per month. It, therefore, follows that it is not known whether more coal is consumed for industrial purposes during the summer than during the winter months. It is known, of course, that the domestic consumption is larger.

"The Federated American Engineering Societies have undertaken to make a definite study of the important factors in the whole question of the storage of coal, particularly to secure an adequate supply when and where needed. . . .

"In making this study, the Federated American Engineering Societies hope to bring to the attention of all concerned the fundamentals involved, the economic and social advantages to accrue to the public through a larger practice in the storage of coal."

Searles Tries to Shift to Operators Blame For Excess of Bituminous Miners

Ellis Searles attacks the statement of the bituminous coal operators with respect to who is responsible for the excess number of mines in the soft coal industry, in a "press release" dated May 15, 1923. He states in part that:

"Through the medium of amateurish statements issued to the press, the Bituminous Operators' Special Committee, a thoroughly non-union aggregation, has repeatedly made the charge that the United Mine Workers of America is responsible for the fact that there are 200,000 surplus miners in the coal industry. In their hectic demoralization these non-union operators seek to induce the public to believe that the miners' union reaches out and drags in men from anywhere and everywhere in order to increase its membership. Their statements on that subject are wholly untrue and should not be accepted or believed by the public. And in order that the commission may not be misled by any such mis-statements, purposely made, we desire respectively to call your attention to the real situation. We want the commission to have facts, not misrepresentations.

"The fact is that the coal operators themselves determine just how many members the United Mine Workers of America shall have; they determine just who shall become members of this union; they determine just who shall not become members of the union; they are responsible for the size and character of the membership.

"The union does not reach out and drag men into the industry and into its membership. The union does not have, nor does it attempt to exercise, the right to hire or discharge any man in or around any coal mine. That right belongs exclusively to the operator, and the union recognizes that right to the fullest degree.

"These coal operators continue to carry these 200,000 surplus men on their payrolls and refuse to turn them loose. There is not enough work to furnish steady employment for this vast number. The bituminous mines of the country are operating only approximately 40 to 50 per cent of full time. That's the reason there is so much idleness among coal miners. Yet each operator insists upon maintaining a 100 per cent working force of men at all times in order to be ready for capacity operation when the opportunity arises.

"Never was there a greater opportunity for a set of employers to perform a real service to the American public than that which now presents itself to the coal operators. If they will close down 4,000 of the unnecessary coal mines that are now open and operating spasmodically they will reduce the number of surplus miners proportionately and, thus *reduce the production cost of coal.* This, in turn, would mean *cheaper coal* to the consumer. That's what the consumer is interested in. The United Mine Workers of America cannot close down these mines, because it has no such right, power or authority. Nor can it, for the same reason, put 200,000 miners out of the industry. But the operators can do it if they will. We challenge them to make the start.

"The United Mine Workers of America has a membership of more than 500,000 men who are employed only a part of the time. The union, the operators, the industry, the public and the nation would be better off if there were 4,000 fewer coal mines and if there were 200,000 fewer miners with steady employment for all of them. But so long as the coal operators continue to hire more men; so long as they refuse to reduce their working force to a proper basis; so long as they insist upon keeping open these 4,000 useless mines; so long as they persist in their attempts to operate every possible mine, even at 40 per cent of full time, just so long must they assume responsibility for the demoralization that exists in the coal business."

Commerce Commission Hears Arguments for Cut in Rates on Coal from Kansas Field to Missouri River

The attention of the whole Middle West and Southwest coal industry centered largely on the rate hearing in Kansas City, Mo., which began May 17. There the battle of the Kansas and Oklahoma producers to get lower freight rates on Southwestern coal into their main market region, the Missouri Valley, or higher rates from Illinois into the same region, was fought with much verbosity. Southwestern producers contend that unreasonable rates are strangling them to death. Their opponents, the Illinois producers and the carriers with long hauls from Illinois to the valley markets, declare it is oil, not Illinois rates, that is doing the strangling, that present rates are fair, and that a revision downward would upset the rate fabric in various parts of the country. The Southwestern operators proposed a schedule of reductions on rates out of their own fields to valley points.

Submission of evidence to back up the complaint—I.C.C. docket No. 14,661 filed by the Southwestern Interstate Coal Operators' Association and the Oklahoma Coal Operators' Association—was made before J. P. McGrath, examiner for the Interstate Commerce Commission. The whole burden of the Southwest case, as put in mainly by C. E. Warner, traffic manager of the Southwestern association, and A. P. Budowsky, traffic manager of the Oklahoma association, was that present rates between all fields and the Missouri Valley are discriminatory in favor of Illinois.

Mr. Warner, the first witness, proposed a new scale of rates from the mines to the destination cities, designed, he explained, to bring about a more stable ratio between freight charges and distances hauled. As a basis for his schedule he suggested a charge of $2.49 a ton on lump from the Oklahoma-Arkansas mines to Kansas City, and $2.07 on slack. From the Pittsburg group he suggested a charge of $1 a ton less on each of the two grades, or $1.49 for lump and $1.07 for slack. For the sake of simplicity, dealing only with the two larger origin groups and the larger destination cities, Mr. Warner's suggested changes may be tabulated as follows:

TO KANSAS CITY

From Oklahoma-Arkansas: Rates	Lump	Slack
Present	$3.28	$2.21
Proposed	2.49	2.07
Reduction	.79	.24
From Pittsburg:		
Present	$1.70	$1.34
Proposed	1.49	1.07
Reduction	.21	.27

TO ATCHISON, ST. JOSEPH AND LEAVENWORTH

From Oklahoma-Arkansas: Rates	Lump	Slack
Present	$3.52	$3.01
Proposed	2.74	2.32
Reduction	.78	.72
From Pittsburg:		
Present	$1.82	$1.70
Proposed	1.54	1.32
Reduction	.28	.38

TO OMAHA AND COUNCIL BLUFFS

From Oklahoma-Arkansas: Rates	Lump	Slack
Present	$3.89	$3.52
Proposed	3.49	3.07
Reduction	.40	.45
From Pittsburg:		
Present	$2.67	$2.31
Proposed	2.49	2.07
Reduction	.18	.24

TO SIOUX CITY

From Oklahoma-Arkansas: Rates	Lump	Slack
Present	$5.22	$4.50
Proposed	3.99	3.57
Reduction	1.23	.93
From Pittsburg:		
Present	$3.77	$3.04
Proposed	2.99	2.57
Reduction	.78	.47

From the table it may be seen that Mr. Warner's idea is to make the charge on both grades from all origin groups to Leavenworth, Atchison and St. Joseph 25c. higher than to Kansas City; Omaha and Council Bluffs, $1 higher than to Kansas City; and to Sioux City, $1.50 higher than to Kansas City. Such a schedule, he maintained, would equalize haulage charges in relation to distances hauled and do away with present apparently discriminatory charges from origin groups to destination groups. Also, he testified, it would give the mines of the Southwest a more even break with the mines of Illinois in competition for the northern Missouri River market. No charge of discrimination in the market for Kansas City and adjacent territory, as between Illinois and Southwestern mines, was pressed.

The present rates between southern Illinois mines and Omaha are $3.71 for lump and $3.34 for slack, Mr. Warner said, while from the Belleville and Springfield districts they are $3.28 for lump and $2.92 for slack. Rates from Springfield to Kansas City on the Chicago & Alton and on the Wabash, both of which have direct lines between the two points, are $2.49 for lump, $2.37 for commercial lump and $2.07 for slack, Mr. Warner said.

Mr. Warner was followed by Mr. Rudowsky, whose testimony was an elaboration of that which had preceded. Mr. Rudowsky described conditions in the coal fields of the Southwest, where mines are operating only one or two days a week as a result of no market. Lower freight rates, he declared, would strengthen the market and give the mines more operating time.

A. M. Corp, Topeka, statistician for the Kansas Public Utilities Commission, testified that traffic density on railroads of the territory through which coal from the Southwestern mines must pass to the Missouri River markets differed little from that through which Illinois coal must pass to the same market. Cross examination of Mr. Corp attempted to show that he used different standards of comparison in his figures, using gross tonnage measurements in some cases where net tonnage should apply.

H. L. Bennett, Oklahoma City, rate expert for the Oklahoma corporation commission, made similar comparisons of traffic density between the Oklahoma and Illinois mines and the Missouri River. Both the states of Kansas and Oklahoma are interveners for the complaints.

John L. Brown, representing the coal dealers of Sioux City, Iowa, declared many industries in Sioux City have been forced to burn oil instead of coal because of prevailing high railroad rates. C. H. Markham, of the Midland Coal Co., of Kansas City, had testified to the same effect concerning the competition between oil and coal in Kansas City.

Clyde M. Reed, chairman of the Kansas Public Utilities Commission representing not only the state but also mining communities and the miners' organization, was the final witness for the complaint. His testimony was based principally on his official observations while a member of the Kansas Industrial Court, and later as a member of the Utilities Commission. He said between 8,000 and 10,000 men in mining regions are now out of work.

R. T. Willette, transportation commissioner for the Atchison Chamber of Commerce; C. E. Childe, transportation commissioner for the Omaha Chamber of Commerce, and W. H. Fitzpatrick, traffic commissioner of the St. Joseph Chamber of Commerce, testified concerning the effect of present rates on their cities, and all requested rates even lower than those suggested by Mr. Warner.

H. S. Mitchell, manager of the Coal Credit and Correct Weight Bureau of the Kansas City Chamber of Commerce; William Bartrim, of the Alpine Ice & Fuel Co., Kansas City, and Charles L. Dooley, traffic manager of Peet Bros. Mfg. Co., Kansas City, were other witnesses for the complaint.

The defendants and railroad interveners in opposition to the complaint were of three distinct groups—the Southwestern origin lines. whose principal coal traffic is from the mines of the Southwest; the lines whose principal coal business in the Missouri Valley is from Illinois mines to valley markets, and those which serve both the Southwest and Illinois. Of the first group, the Missouri Pacific, the Frisco, the Kansas City Southern and the Missouri, Kansas & Texas were selected by the Southwestern Freight Bureau to conduct the defense. These four roads have attempted

to reduce rates in the past, but their reductions have been overruled by the Interstate Commerce Commission.

C. C. P. Rausch, of the Missouri Pacific; Bruce A. Rodgers of the Kansas City Southern, and H. E. Morris, of the Frisco, testified that coal shipments over their lines have been dwindling in recent years. They denied that their present rates are too high, but insisted that rates from Illinois to the Missouri River are too low.

The Wabash offered the first spirited testimony for the defense. The Wabash has a direct line from Illinois to Missouri River territory, but it also carries transfer coal from the Southwest to northern Missouri Valley cities. T. R. Farrell, of St. Louis, assistant general freight agent of the Wabash, defended present rates from Illinois, and declared unequivocally his road's intention to combat reductions from the Southwest.

The Southern Ry., through its general freight agent, F. S. Reigel, of Cincinnati, and its assistant freight traffic manager, K. B. Hannigan, of St. Louis, intervened in opposition to rate reductions from Kansas specifically, and in defense of present rates from Illinois.

R. H. May, vice-president and general sales manager of the Southern Coal, Coke & Mining Co., of St. Louis; E. M. Stanton, general sales agent of the Lumaghi Coal & Mining Co., of St. Louis, and C. P. Hoy, traffic commissioner of the coal traffic bureau of the 5th and 9th districts of Illinois, intervened in opposition to the complaint. All testified to the fairness of present rates both out of Illinois and the Southwest.

Objection to testimony concerning Illinois rates, which Mr. Phillips, for the Southwestern operators, insisted did not enter into the case, was sustained, but later the witnesses were permitted to continue. Mr. Phillips insisted that Omaha was the only city of the Missouri Valley affected to any extent by Illinois competition.

The substance of testimony concerning Illinois-Southwest competition was concisely given by W. A. Holley, traffic manager for the Central Illinois Coal Traffic Bureau, in an interview with a representative of *Coal Age*. "During the labor trouble in Kansas," he said, "Illinois coal was shipped to the Missouri Valley. But since the miners settled down to work and Kansas began producing coal, that business has steadily decreased until now it is negligible. Oil is the thing that is playing havoc with the markets of the Southwest."

H. J. Pollack, of Chicago, assistant to the coal traffic manager of the Burlington, testified in opposition to any reduction of rates in the Southwest, as also did R. P. DeCamp, of Chicago, assistant coal traffic manager of the Illinois Central. Both said present rates are reasonable. Mr. DeCamp denied any personal interest of his road in Southwestern rates. "We get our bridge toll for carrying the coal across the river between Omaha and Council Bluffs, regardless of what the rate from the fields may be," he said.

In the final session of the hearing, which closed Monday afternoon, S. G. Lutz, of Chicago, Chief of Traffic of the Chicago & Alton, intervening in opposition to the complaint, declared that the proposed reduction would create a monopoly for Southwestern mines in the Missouri Valley market, closing it to Illinois coal. "We do not oppose a general readjustment of rates whenever reductions can be brought about that will give the fullest benefit to the consumer as well as the producer. We do oppose any piecemeal readjustment," he said. Mr. Lutz testified that of his road's $27,000,000 coal-freight revenue last year, $1,000,000 was derived from Illinois coal billed to Kansas City.

The Central Illinois Coal Traffic Bureau, an intervener against the complaint, was represented by its president, H. C. Adams, and its traffic manager, W. A. Holley. Both criticised the proposed reduction as conducive to a monopoly in the Missouri Valley for Southwestern coal and declared the Southwest has no harder scramble for a market than Illinois has. "If rates from the Southwest are reduced, Illinois will be forced to seek reductions also," Mr. Holley testified. "Whatever the outcome of this action, we may be compelled to seek a return to the 1916 differential of 50c. for fine coal and 70c. for lump between Southwest and Illinois rates to Kansas City."

Representatives of Illinois coal companies and of the Springfield (Ill.) Chamber of Commerce, intervening in opposition to the complaint, substantiated the testimony of Messrs. Adams and Holley.

Hammond Favors Cheaper Production Cost And Larger Output of Anthracite

Substitutes for anthracite coal were used with sufficient success last winter to give great impetus to their continued use, John Hays Hammond stated in the course of a talk before the National Conference of Business Paper Editors in Washington, May 21. He admitted that the anthracite operators are worried by the prospect of competition from cheaper fuels. He said that the company mines had done much to stabilize anthracite prices. During the entire period from 1903 to 1917, he pointed out, the Reading company advanced its rate only 25c. per ton.

If legal and other obstacles could be removed, he said, the anthracite field could absorb many thousands of the surplus of coal miners in the bituminous districts. If means can be found for reducing the costs of anthracite production and distribution, he believes its use can be extended to the point where as many as 50,000 additional miners could be employed. Mr. Hammond stated that John L. Lewis had told him that he would rather have a union with 400,000 members who had steady employment than one with 700,000 members employed only a portion of the time.

From his remarks it could be judged that Mr. Hammond favors making public periodic statements showing the margin of profit enjoyed by each producer of or dealer in coal. While he admits that this would reveal that which is regarded as a legitimate trade secret, he is inclined to think it would be better for all concerned. He let it be known also that the coal commission probably will attempt to draw up a code in which will be set forth the rights of the employer and the rights of the employee. He also stated that the help of several associations had been solicited to make a study of furnace design, flue design and other problems incident to the use of a wider range of fuels for domestic purposes.

Government Must Pay Market Price for Coal Requisitioned, Supreme Court Rules

The Navy Department did not pay a just price for coal it requisitioned from the New River Colleries Co. at Hampton Roads, between Sept. 17, 1919, and Feb. 1, 1921, according to a decision rendered by the U. S. Supreme Court, May 21, which sustained decisions of lower courts awarding additional compensation to the company. The decision was read by Associate Justice Butler.

Acting under Section 10 of the Lever Act, the Navy Department requisitioned some 60,000 tons of coal which belonged to the New River Colleries Co., between the dates mentioned, offering the price fixed by the President. The company accepted 75 per cent of the amount offered and entered suit in the U. S. District Court of New Jersey for a greater amount, contending that the market price was higher than that offered by the government. A jury in the District Court awarded a judgment for an amount in excess of that offered by the government, and this judgment was affirmed by the Circuit Court of Appeals.

In sustaining this judgment, the Supreme Court declared: "The United States had the right to take the coal on payment of the market prices prevailing when and where the coal was taken; the owner was not entitled to more and could not be required to take less." The opinion affirms the finding of fact by the lower courts that the market prices at Hampton Roads for spot export coal were higher than the price offered by the government in settlement, and that the spot price, with an active market, should have controlled rather than the domestic future price which the government had attempted to introduce. Efforts of the government to introduce evidence of "real value" in contradistinction to "market value" were properly ignored by the lower courts, the opinion stated.

Hammond Warns Not to Expect Too Much in Anthracite Report; Pepper to Advise on Royalty Regulation

By Paul Wooton
Washington Correspondent of *Coal Age*

Anthracite coal, in the opinion of John Hays Hammond, chairman of the President's coal commission, is paying a disproportionate freight rate. In making that statement, Mr. Hammond was careful to point out that the railroads must be allowed to earn reasonable profits, but he does believe they are collecting charges on anthracite coal which are out of proportion to the charges levied on other commodities. The fact that anthracite traffic originates in a comparatively small area and does not require the construction of additional sidetracks and can be concentrated easily in full trainloads should be reflected in the freight rate, Mr. Hammond believes. He also called attention to the fact that there are great differences in favor of anthracite in the cost of handling bituminous and anthracite coals. He admitted that the commission is considering a recommendation that the cost of service be made the basis for computing freight rates on anthracite.

Publication in the daily press of Mr. Hammond's statement in regard to anthracite rates gave rise to inquiries as to how soon a reduction might be expected. This led to a request that publication be made of the fact that no one should delay purchase of coal in the hope that a lower freight rate will be available in the near future. In that connection, attention was called to the fact that even should the commission vigorously recommend such a rate reduction, this does not mean that the Interstate Commerce Commission will act on the recommendation, and even should it be disposed to embark upon a new study of anthracite coal rates, many months probably would be required for the hearings and other formalities in connection with such an investigation. The coal commission is anxious that the public understand that there is no prospect of any rate reduction for a year at least and no promise of a reduction at any time.

In sounding this note of caution, the commission has in mind the heavy losses which came to some consumers who delayed purchases of coal awaiting the much heralded reduction in the rates on bituminous coal last year.

Drafting of Anthracite Report Not Under Way

The commission has conferred at length with the independent anthracite operators but no important new facts were brought out, Mr. Hammond stated. Much the same ground was covered as was the case when the company operators met with the commission. One of the interesting phases of the discussion, Mr. Hammond stated, pertained to methods of selling. He gave no details. There also was discussion of the possibility of improving methods of conciliating labor disputes. The operators have a variety of ideas but all admit that there is no easy solution for any of the problems that the anthracite producers are facing. The commission has been advised that the report of the anthracite committee will be forthcoming in the near future and will be confined largely to constructive suggestions.

No portion of the anthracite report has been drafted as yet, Mr. Hammond asserted. The commission are reaching no conclusions since they have at their disposal returns covering only 30 per cent of the anthracite production. The rate at which replies to the questionnaires are being received will accelerate rapidly from this time on, he predicted. It leaked out at the conference that Senator Pepper is the "distinguished Pennsylvania lawyer" who will report to the commission in detail as to the possibility of exercising regulation over the matter of royalty. His report will simply review the Pennsylvania statutes that would have a bearing on that practice.

Mr. Hammond cautioned against expecting too much in the anthracite report. The problems of anthracite are overlapping and it will be difficult to reach conclusions before all of the questionnaires have been tabulated. For that reason, he believes, the real results of the commission's work will be embodied in its final report, although he expects the anthracite report to contain much more "substance" than the preliminary report issued Jan. 15.

The commission is making headway in its study of relationships between the producers and the anthracite carriers and the bearing these relationships have on the price paid by the ultimate consumer. The reports on this work are being made by Professor Hollander and his assistants. Mr. Hammond emphasizes the importance of determining questions of valuation and capitalization before intelligent estimates as to reasonable profits can be made. The advisory committee on valuation plans to report June 15. It is Mr. Hammond's opinion that no additional questionnaire will be required in connection with arriving at fair valuations, as practically all of the information required is covered on the questionnaire already sent out.

That the Interstate Commerce Commission has been urged by the Coal Commission to expedite its consideration of the coal rates in the Northwest, was admitted by Mr. Hammond. He expressed the earnest hope that the existing uncertainty could be removed. From his remarks could be deduced that Mr. Hammond is of the personal opinion that the people of the Northwest should enjoy the benefits incident to water transportation and that the economies represented in the lake movement of coal should be encouraged.

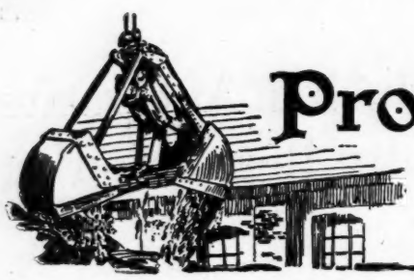
In this connection it may be said that there is some opposition among coal specialists in Washington to any attempt on the part of the Coal Commission to advise the Interstate Commerce Commission. The coal rate structures are delicate pieces of mechanism with which the Interstate Commerce Commission is quite familiar after long experience in efforts to keep them adjusted. Since Congress is prone to act on transportation matters without full knowledge of the intricate questions involved. some fear that a recommendation from the Coal Commission as to an adjustment of anthracite rates would have far-reaching consequences. There also is a feeling that the Interstate Commerce Commission rather resents some of the suggestions which have been made to it in regard to its handling of matters concerning coal. There is doubt whether any constructive service can be performed in suggestions to that body on matters pertaining to coal rates.

New Haven Road Lifts Embargo Limiting Anthracite Shipments to New England

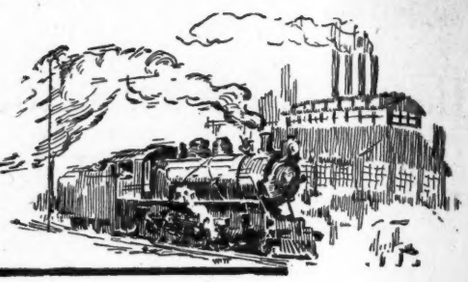
The New York, New Haven & Hartford R.R. announced May 18 that it had lifted all embargoes on east-bound freight, including the limitation of anthracite shipments to New England, which had prevailed since the fuel shortage of last winter. The order removes the regulation of anthracite through the Campbell Hall Gateway, near Poughkeepsie. which limited to 100 cars a day the amount to be accepted from connecting roads. Removal of the congestion which afflicted all Eastern roads last winter, improvement of equipment and the more equable distribution of freight along the lines made it possible to lift the embargo, said New Haven officials. The summer demand for anthracite in New England has already set in. they reported.

Anthracite Miners Call Wage Convention

The anthracite mine workers, through their district boards. according to a news despatch from Wilkes-Barre, are to hold a convention at Scranton on June 26 to formulate new demands to take the place of the present wage agreement, which expires Aug. 31. Details of the demands to be formulated were not forthcoming.



Production and the Market



Weekly Review

A feeling of confidence pervades the coal trade. Spot prices are comparatively easy but there is a decided firmness in the contract market. Current output is easily absorbed, the demand for domestic sizes of anthracite and for high-grade steam bituminous coal being avid. Contracting is going on quietly at good prices. So long as smokeless commands around $4 in Western markets the tidewater supply will be short, especially with the limited car supply offered by the N. & W. and C. & O.

Production of soft coal continues above 10,000,000 net tons weekly with car supply somewhat easier. Output of anthracite for the first four months of 1923 was 33,931,000 net tons, the largest recorded production for a like period and 21 per cent above the average for the same period of the last nine years. April production was 8,063,000 net tons, exceeded by the corresponding month in 1914, 1915 and 1918, but 14 per cent above the April average for the last eight years.

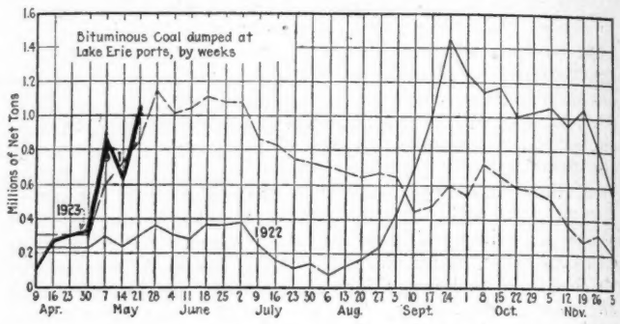
Spot prices for soft coal declined last week, *Coal Age* Index dropping 5 points to 221 on May 21. The average price was $2.68. Pocahontas, Pittsburgh, Mount Olive and Springfield recorded advances and Clearfield, Somerset, Cambria, Kanawha and Standard showed decreases in prices.

Demand Improves in Middle West

There was a slight improvement in demand for domestic sizes in the Middle West. Dealers were slow in stocking but were buying some because an increase of 25c. per ton is scheduled to go into effect on June 1. In the East there has been no material change. Although the New Haven lifted its embargoes on anthracite there remain numerous local embargoes in New England that interfere with deliveries.

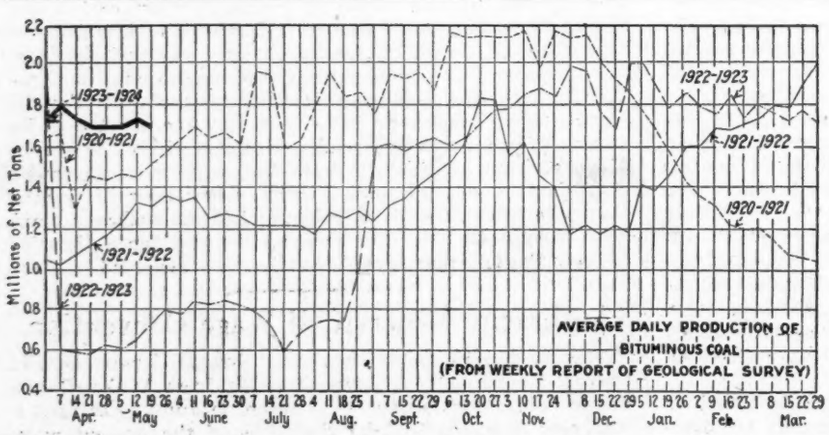
The export market remains quiet. During the first twenty days of May 19 ships carrying 182,973 tons of cargo coal left Baltimore, as compared with 170,000 tons during the corresponding period of April. Thirteen of the foreign trade vessels loaded 13,602 tons of bunker coal, making total dumpings at Baltimore to April 20 196,575 tons. Of this amount, 19,432 tons went to South America. During the week ended May 14 two cargoes of coke aggregating 8,518 tons went to France.

Lake navigation is now in full swing. Anthracite and bituminous coal is moving to the Head-of-the-Lakes in good volume; receipts at Duluth-Superior during the first five days of the season were approximately as large as was unloaded during the first 17 days of the season last year.



"The recent gradual decline in soft-coal production was checked in the second week of May," says the Geological Survey, "when, according to preliminary estimates, the output increased to 10,211,000 net tons, a gain of 150,000 tons over the revised estimate of the week preceding. Preliminary reports of cars loaded during the first half of the week May 14-19 indicate a continued production at the rate established the week preceding and a probable total of 10,200,000 tons."

Dumpings at Hampton Roads for all accounts during the week ended May 17 were 333,977 net tons, a decrease of 35,025 net tons from the previous week.



Estimates of Production

(Net Tons)

	1922	1923
BITUMINOUS		
April 28	4,175,000	10,103,000
May 5 (*b*)	4,164,000	10,061,000
May 12 (*a*)	4,433,000	10,211,000
Daily average	739,000	1,702,000
Calendar year	153,126,000	199,768,000
Daily av. cal. year	1,361,000	1,772,000
ANTHRACITE		
April 28	5,000	2,116,000
May 5	6,000	2,021,000
May 12	7,000	1,903,000
Calendar year	21,816,000	37,518,000
COKE		
May 5 (*b*)	95,000	407,000
May 12 (*a*)	97,000	403,000
Calendar year	2,493,000	7,227,000

(*a*) Subject to revision. (*b*) Revised from last report.

Domestic sizes of anthracite keep moving, but the steam coals are accumulating. Considerable of the larger coals are going into Canada and the Northwest. Prices for independent coal remain around $11 with concessions to those buyers who take steam sizes as part of their order.

Midwest Gets a Little Trade

A slight movement of domestic sizes has begun throughout the Middle Western coal fields. Dealers all over this section of the country are hesitant about stocking, but they are nibbling a little because of the 25c. increase scheduled to go into effect June 1. After that date another two weeks of low market is expected before real summer buying sets in. By July 1 coal-wise men think business will have picked up considerably. Midwest steam trade continues slow, as might be expected with the market in its present condition. Central Illinois, where production came almost to a full stop a week ago, had so few screenings available that some sold up to $2, while in southern Illinois where are many storage piles, they sank below $1.75. Now, however, there is little Southern to be had at less than $1.75, because most producers decided to hold on rather than continue giving coal away. Most mines still have loads of all sizes unbilled on tracks.

Duquoin, Jackson County, Mt. Olive and Standard fields are all acutely inactive except in cases of mines with mine-run contracts. Standard 2-in. lump is quoted $2@$2.15, and smaller sizes at just what they will bring. Screenings at $1.50 are about the only coal moving.

St. Louis Stirs Slightly

Household trade in St. Louis was stirred up a little during the past week by newspaper accounts of the probable coal difficulties of next season. Domestic demand from the country was unaffected, however, and the steam trade is dull. Anthracite, smokeless, and a little Arkansas semi-anthracite get most of the buyers though there is little Arkansas in the city. Apartment-house storage of Standard 2-in. lump is starting at prices from $4.50 up. Cut-throat competition is troubling the trade.

Kentucky Has Its Troubles

The State of Kentucky and surrounding regions are pretty well filled with distress coal just now. This is mainly the result of the reopening of western Kentucky mines that were on strike until two weeks ago. Such a rush for business

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

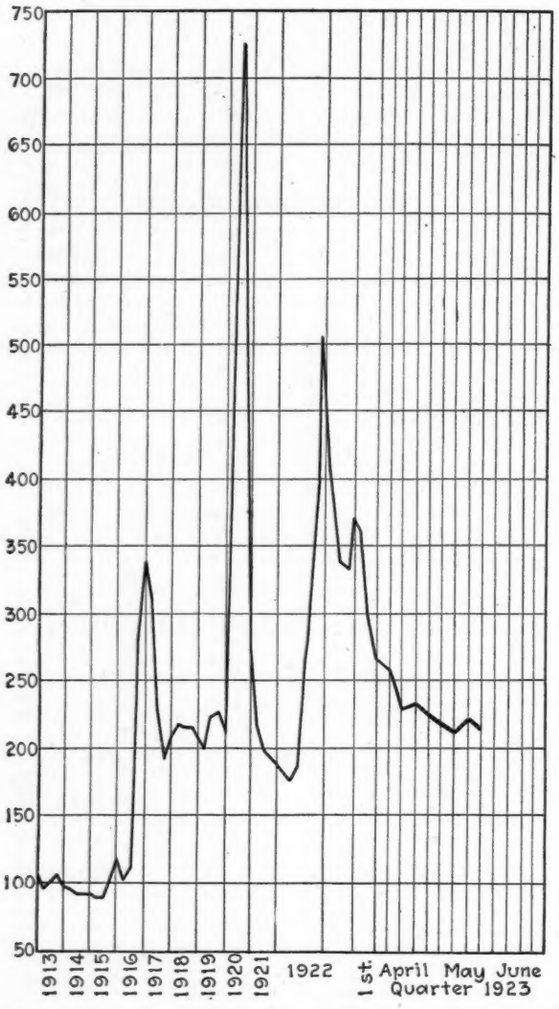
Low-Volatile, Eastern	Market Quoted	May 22 1922	May 7 1923	May 14 1923	May 21 1923†
Smokeless lump	Columbus	$3.65	$6.15	$6.25	6.00@ 6.50
Smokeless mine run	Columbus	3.30	4.00	4.10	*3.85@ 4.30*
Smokeless screenings	Columbus	3.25	3.75	3.75	*3.40@ 4.00*
Smokeless lump	Chicago	2.75	6.10	6.10	6.00@ 6.25
Smokeless mine run	Chicago	2.75	3.85	3.85	**4.00@ 4.25**
Smokeless lump	Cincinnati	3.50	6.00	6.00	**6.00@ 6.50**
Smokeless mine run	Cincinnati	3.25	3.85	4.25	4.00@ 4.50
Smokeless screenings	Cincinnati	3.15	3.85	4.10	**4.00@ 4.50**
*Smokeless mine run	Boston	7.35	6.35	6.85	6.75@ 7.00
Clearfield mine run	Boston	3.75	2.50	2.75	*2.25@ 3.00*
Cambria mine run	Boston	4.25	3.10	3.60	*3.00@ 3.50*
Somerset mine run	Boston	3.65	2.75	3.10	*2.75@ 3.25*
Pool 1 (Navy Standard)	New York	.....	3.75	3.75	3.50@ 4.00
Pool 1 (Navy Standard)	Philadelphia	4.75	4.05	4.00	*3.60@ 4.00*
Pool 1 (Navy Standard)	Baltimore	.....	.....	.....	.....
Pool 9 (Super. Low Vol.)	New York	.....	2.80	2.90	2.60@ 3.25
Pool 9 (Super. Low Vol.)	Philadelphia	4.65	3.05	3.00	*2.55@ 3.20*
Pool 9 (Super. Low Vol.)	Baltimore	4.75	2.80	2.75	**2.70@ 2.85**
Pool 10 (H.Gr.Low Vol.)	New York	4.90	2.50	2.50	2.25@ 2.75
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.75	2.45	2.40	*2.15@ 2.60*
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.75	2.25	2.25	**2.30**
Pool 11 (Low Vol.)	New York	4.65	2.20	2.20	*1.85@ 2.30*
Pool 11 (Low Vol.)	Philadelphia	.....	2.00	2.00	**1.85@ 2.30**
Pool 11 (Low Vol.)	Baltimore	4.75	2.00	2.00	2.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	.....	1.80	1.85	1.75@ 2.00
Pool 54-64 (Gas and St.)	Philadelphia	3.40	1.85	1.85	**1.95@ 2.15**
Pool 54-64 (Gas and St.)	Baltimore	4.00	1.80	1.80	1.80
Pittsburgh sc'd gas	Pittsburgh	.....	2.85	2.85	2.75@ 3.00
Pittsburgh mine run (St.)	Pittsburgh	.....	2.00	2.00	2.00
Pittsburgh slack (Gas)	Pittsburgh	.....	1.75	1.75	**1.75@ 2.00**
Kanawha lump	Columbus	3.60	3.50	3.25	3.00@ 3.50
Kanawha mine run	Columbus	3.25	2.25	2.20	2.00@ 2.40
Kanawha screenings	Columbus	3.35	2.05	1.75	1.60@ 1.90
W. Va. lump	Cincinnati	3.40	3.50	3.75	*2.75@ 4.50*
W. Va. Gas mine run	Cincinnati	3.65	2.35	2.20	*1.65@ 2.00*
W. Va. Steam mine run	Cincinnati	3.40	2.35	2.20	*1.65@ 2.00*
W. Va. screenings	Cincinnati	3.25	2.10	2.00	*1.60@ 1.75*
Hocking lump	Columbus	3.90	2.85	2.80	*2.50@ 3.00*
Hocking mine run	Columbus	3.65	1.95	1.95	1.85@ 2.10
Hocking screenings	Columbus	3.50	1.60	1.60	*1.35@ 1.60*
Pitts. No. 8 lump	Cleveland	3.90	2.90	2.90	**2.40@ 3.50**
Pitts. No. 8 mine run	Cleveland	$3.25	$2.15	$2.15	**$2.10@$2.25**
Pitts. No. 8 screenings	Cleveland	3.90	1.80	1.60	**1.50@ 1.85**
Midwest					
Franklin, Ill. lump	Chicago	.....	3.80	3.80	3.50@ 4.10
Franklin, Ili. mine run	Chicago	.....	3.10	3.10	3.00@ 3.25
Franklin, Ill. screenings	Chicago	.....	1.85	1.75	**1.75@ 1.90**
Central, Ill. lump	Chicago	.....	2.30	2.30	**2.50@ 2.75**
Central, Ill. mine run	Chicago	.....	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	.....	1.55	1.85	1.75@ 2.00
Ind. 4th Vein lump	Chicago	.....	3.35	3.35	3.25@ 3.50
Ind. 4th Vein mine run	Chicago	.....	2.85	2.85	2.75@ 3.00
Ind. 4th Vein screenings	Chicago	.....	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	.....	2.85	2.85	2.75@ 3.00
Ind. 5th Vein mine run	Chicago	.....	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	.....	1.55	1.65	*1.50@ 1.65*
Standard lump	St. Louis	.....	2.50	2.60	*2.00@ 2.50*
Standard mine run	St. Louis	.....	1.85	1.80	1.75@ 1.90
Standard screenings	St. Louis	.....	1.50	1.50	1.50
West Ky. lump	Louisville	3.25	2.60	2.60	2.50@ 2.75
West Ky. mine run	Louisville	3.25	1.90	1.90	1.85@ 2.00
West Ky. screenings	Louisville	3.25	1.75	1.60	1.50@ 1.75
West Ky. lump	Chicago	3.60	2.60	2.60	2.50@ 2.75
West Ky. mine run	Chicago	3.60	1.80	1.80	1.75@ 1.85
South and Southwest					
Big Seam lump	Birmingham	2.00	2.70	2.70	2.70
Big Seam mine run	Birmingham	1.70	2.05	2.05	1.85@ 2.25
Big Seam (washed)	Birmingham	1.85	2.35	2.35	2.25@ 2.50
S. E. Ky. lump	Chicago	3.65	3.75	3.75	3.50@ 4.00
S. E. Ky. mine run	Chicago	3.50	2.85	2.85	*2.25@ 2.50*
S. E. Ky. lump	Louisville	3.90	4.10	4.00	*3.50@ 4.00*
S. E. Ky. mine run	Louisville	3.40	2.45	2.50	2.25@ 2.75
S. E. Ky. screenings	Louisville	3.40	1.90	1.90	1.80@ 2.00
S. E. Ky. lump	Cincinnati	3.50	3.35	3.35	2.50@ 4.25
S. E. Ky. mine run	Cincinnati	3.50	2.25	2.00	*1.60@ 2.00*
S. E. Ky. screenings	Cincinnati	3.25	2.00	1.80	*1.50@ 1.75*
Kansas lump	Kansas City	4.25	3.85	3.85	3.25@ 4.50
Kansas mine run	Kansas City	4.15	3.25	3.25	3.00@ 3.50
Kansas screenings	Kansas City	2.65	2.60	2.60	2.50@ 2.75

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	May 14, 1923 Independent	May 14, 1923 Company	May 21, 1923† Independent	May 21, 1923† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.35	.....	$7.75@$8.35
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	$8.50@11.00	8.00@ 8.35	$8 50@11.00	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.50	8.10@ 8.35	9.25@ 9.50	8.10@ 8.35
Egg	Chicago*	5.09	7.50	8.25	12.00@12.50	7.20@ 8.25	12.00@12.50	7.20@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	8.50@11.00	8.00@ 8.35	8.50@11.00	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Stove	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.25	12.00@12.50	7.35@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.20	8.50@11.00	8.00@ 8.35	8.50@11.00	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.15	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.35	12.00@12.50	7.35@ 8.35
Ranges	New York	2.34	.....	.....	.....	8.30	.....	8.30
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.30@ 7.25	6.00@ 6.30	6.30@ 7.25	6.00@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.00	3.50	2.25@ 3.50	3.50@ 4.15	2.25@ 3.50	3.50@ 4.15
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.00@ 3.50	3.50	3.00@ 3.50	3.50
Rice	New York	2.22	2.00@ 2.50	2.50	1.50@ 2.50	2.50	1.50@ 2.50	2.50
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Barley	New York	2.22	1.50@ 1.85	1.50	1.00@ 1.50	1.50	1.00@ 1.50	1.50
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.15@ 1.50	1.50	1.15@ 1.50	1.50
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	1.60	.....	1.60

*Net tons, f.o.b. mines †Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 221, Week of May 21, 1923. Average spot price for same period $2.68. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

followed the resumption of work that most coals in the state have been selling off. There is much bemoaning the fact that Lake trade does not seem to be drawing heavily enough from Kentucky.

Some state and local contracts for the season show eastern Kentucky screenings at $2.25 and mine-run at $2.40 while western Kentucky screenings have been signed up at $1.50@$1.85 f.o.b. mines. Already western Kentucky distress screenings have sold as low as $1.25@$1.35. Car supply is the best it has been for months.

Northwest Exerts Itself

A concerted and intense selling campaign is going on throughout the Northwest. The docks at the Head-of-the-Lakes have reduced soft-coal lump and mine-run prices to a point where they can undersell Illinois coal an average of about 28c. at Minneapolis and St. Paul and are striving mightily to regain lost business. They have lost little if any on the dock stocks carried over because most of the coal was screenings, price of which has held above cost and is not softening noticeably. Anthracite, at last year's prices, is moving well into the upper Lakes inland region.

Around Milwaukee the first spurt of business marking the opening of the Lake season has not subsided and coal concerns are scratching hard for business. The big May rush prophesied by many did not appear. Retailers feel no demand from consumers and big consumers are hesitant about contracting just now.

West Feels Better

Two things seem to portend better days for the Southwestern field. Early orders for threshing coal are beginning to trickle in, and already there is a noticeable increase in the sale of storage coal. Still, mines are working only one or two days a week, and the Southwest has a long way to go before it will be out of the desert.

The retail price of domestic sizes, cut several weeks ago to encourage storing, has not yet been raised, although the prediction then was that it would advance 50c. in May and 50c. a month until September.

Railroad business in Utah is a little better and steam coals generally are improving so that Utah screenings sell now above $1.75. Domestic trade is dormant, however. The 50c. reduction to encourage storage by householders has had little effect. Northern Pacific Coast trade has livened a shade but Utah mines still average only about two days a week running time.

In Colorado a light snowstorm and accompanying cool weather have combined to sell some coal. Steam trade has shown more effect of this than has domestic. Quotations on the slow sizes have lowered a little.

Ohio Consumers Play Waiting Game

The situation in Ohio is quiet. At Columbus buying continues at a low level, as large consumers apparently are playing a waiting game. Purchasing agents for the larger users are not anxious to close contracts, believing that low prices will prevail for the greater part of the summer. Public utilities and railroads are the largest buyers, although some contracts are being made by iron and steel concerns.

Cincinnati dealers believe that buyers in Michigan, northern Ohio and Indiana are waiting for an indication that the bottom has been reached before entering good sized orders. Railways are believed to be getting ready to make purchases, it being reported that one carrier within the next few days will place an order that will result in the withdrawal of between 50,000 and 60 000 tons from that market. The majority of steam coal users in the Cleveland market are still looking to the open market for their coal and have not yet made contracts for their requirements.

There is a somewhat more hopeful feeling among operators in the Pittsburgh district as to the future of the market, based upon the expectation of car shortages. Demand for coal is not expected to improve to any great extent soon, though the Lake demand has room for much betterment. The present dullness in central Pennsylvania is attributed, in a measure, to the high production of the first four months of this year.

Conditions in the Buffalo market are quiet. Demand is light, although general business is good.

New England Consumers See Auguries

While in New England there is no material change in the current market there are indications of a different attitude on the part of buyers. A succession of embargoes affecting traffic through all the gateways is bringing home to the consumer the possibilities later on. It is realized that sometime during the fall and winter the railroads will reach the peak of ton miles and that probably long before that time there will be a shortage of equipment and corresponding congestion on the through lines.

All-rail from central Pennsylvania quotations are unmodified. A few producers of high-grade coal have about concluded they have all the spot business required to keep mines in operation the balance of May and are again turning their attention to contracts over periods of six to ten months. Transportation conditions have made it difficult to figure available tonnages, but more than a few operators feel they will have less trouble placing output the next three months than has been the case since February.

Hampton Roads prices rule reasonably firm at a $7 level for Navy standard coal. with an occasional sale of No. 2 grade at $6.75 or less. The smokeless districts continue on

less than 50 per cent output, but it is of some interest to note that the shortage is now attributed to lack of railroad facilities rather than to a restricted market. Occasional export inquiry helps out the spot market, but due to the flood of Pennsylvania coal offered at New England points there is only very light inquiry for Pocahontas and New River for distribution inland. On cars Boston, Providence, and Portland quotations are still $8@$8.25. A few market cargoes furnish surplus enough to keep prices easy on about that range.

Movement via the Philadelphia piers continues in good volume. A few steamers ordinarily plying to Norfolk and Newport News have been noticed loading at Port Richmond, and to an extent this is a development of some interest. Some of the coal moved is of course anthracite, due to the great pressure to get domestic sizes forward, but much the heavier proportion is steam coal, both high and low volatile, for use at plants in New England adjacent to tidewater. Congestion all-rail has been sufficient to make the water route a matter of decided interest among certain buyers.

New York Market Notes Slight Improvement

A slight improvement in buying was noticeable in the New York market. Inquiries increased and there was an apparent tendency on the part of consumers to "cover" themselves. There are many loaded boats in the New York harbor and some sales of distressed coals at low prices were made. The market at Philadelphia continues quiet with no evidence of a sustained demand. Demand centers around the high grades. At the coal docks there is little activity and clearances show a decrease. There has been little change in the Baltimore market with regard to steam and gas coals. Industries are buying in the open market. The gas-coal market is sustained in part by the export demand.

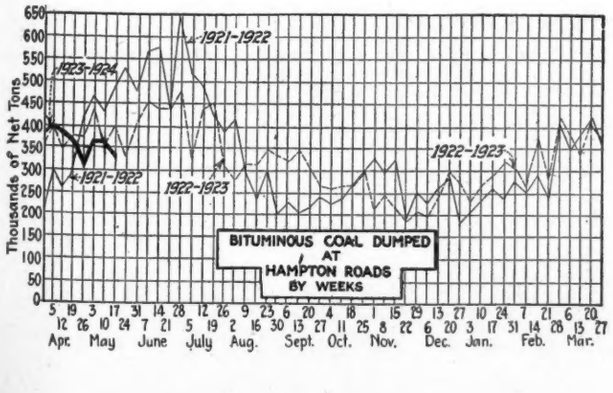
Inquiry from industrial sources at Birmingham is light and there is an accumulation of all grades of coal. The coke market has shown some weakness. Domestic coals are still in active demand.

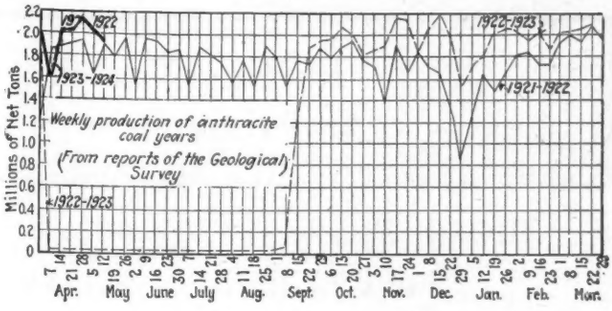
Lake Movement Gains Headway

Of the 90 cargoes of coal shifted to the docks at the Head-of-the-Lakes before May 14, 8 were anthracite. United States Steel Corporation vessels, which usually make the first trip of season empty, carried coal this year to the D., M. & N. Railway. Receipts at Milwaukee during the first half of May aggregated 97,929 tons of anthracite and 319,281 tons of bituminous. During the week ended May 21 Lake dumpings amounted to 988,794 net tons of cargo coal and 46,072 net tons of fuel coal, making the dumpings for the season 3,365 063 net tons of cargo coal and 140,349 net tons of fuel coal.

Demand for Domestic Anthracite Holds Up

There has been no letup in the demand for the anthracite domestic sizes. Egg and stove coals are the shortest in the New York market but there is no surplus of either chestnut or pea sizes. Dealers in Philadelphia are being delayed in filling orders because of the continued cool weather. There is a fairly heavy movement of barges from Port Richmond to various New England ports. Producers are meeting with delay in moving the steam sizes, and some of the larger companies are sending good sized tonnages to


Thousands of Net Tons
1921-1922
1923-1924
1922-1923
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.


Millions of Net Tons
1921-1922
1922-1923
1923-1924
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

storage. Demand at Toronto is heavy, due to weather conditions. Orders are being received as fast as retail dealers can fill them, although receipts are slightly larger than they were several weeks ago.

"The production of anthracite in the week ended May 12 decreased 6 per cent in comparison with the production in the week preceding," according to the report of the Geological Survey. "The nine principal carriers of anthracite reported loading 36,387 cars, from which it is estimated that the total output, including mine fuel, local sales and the product of dredges and washeries, was 1,903,000 net tons. The decrease appears as the result of holiday observance on Ascension Day, when mine production was cut to about 43 per cent of the average for the other days of the week. Preliminary reports of loading during the week May 14-19 indicate a somewhat lower daily rate of production."

Beehive Coke Output Declines Further

Production of beehive coke, which declined somewhat during the first week in May, showed a further small decrease in the week ended May 12, says the Geological Survey. On the basis of the number of cars loaded by the principal coke carriers the total output is estimated at 403,000 net tons, a decrease of 4,000 net tons when compared with the previous week's production. The decline was all in the Pennsylvania district with small gains in the Middle and Southern Appalachian states.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 30, 1922 Inclusive	Jan. 1 to May 5, 1923 Inclusive	Week Ended May 5, 1923
U. S. Total	55.7	....	....	....
Somerset County	74.9	36.3	33.0	(a)
Panhandle, W. Va.	51.3	57.3	56.0	60.7
Westmoreland	58.8	65.8	56.3	56.3
Virginia	59.9	55.7	56.6	61.1
Harlan	54.8	22.1	24.8	41.0
Hazard	58.4	16.4	24.0	30.5
Pocahontas	60.0	36.6	38.2	38.9
Tug River	63.7	28.8	36.0	36.8
Logan	61.1	26.2	31.3	29.7
Cumberland-Piedmont	50.6	31.7	49.3	51.2
Winding Gulf	64.3	30.4	35.6	41.3
Kenova-Thacker	54.3	42.4	36.3	45.0
N. E. Kentucky	47.7	28.4	28.9	33.0
New River	37.9	31.6	36.9	40.3
Oklahoma	59.6	59.1	44.6	54.2
Iowa	78.4	75.9	73.8	57.4
Ohio, Eastern	46.6	40.8	36.4	43.2
Missouri	66.8	76.3	71.3	57.2
Illinois	54.5	49.9	44.8	30.4
Kansas	54.9	55.9	45.3	25.1
Indiana	53.8	37.7	49.3	31.4
Pittsburgh†	39.8	41.2	37.4	57.7
Central Pennsylvania	50.2	53.4	48.8	54.7
Fairmont	44.0	35.5	37.6	56.7
Western Kentucky	37.7	32.4	32.2	29.0
Pittsburgh*	31.9	56.1	61.5	79.5
Kanawha	13.0	15.6	23.7	26.5
Ohio, Southern	24.3	38.1	31.1	24.0

* Rail and river mines combined.
†Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended May 5, 1923	961,029	175,866
Previous week	963,694	180,127
Same week in 1922	747,200	75,125

	Surplus Cars All Cars	Surplus Cars All Cars	Car Shortage	Car Shortage
May 7	13,556	3,195	28,316	16,672
Same date in 1922	353,239	226,276	....	....
April 30, 1923	13,556	2,849	35,282	17,643

Foreign Market And Export News

British Production Declines Slightly; Some Collieries Sold Ahead

Production of coal in Great Britain's mines took another drop during the week ended May 5, when the output was 5,325,000 tons, according to a cable to *Coal Age*, as compared with 5,721,000 tons the week previous. The decrease was due to May 1 being largely observed as a holiday.

Some collieries in South Wales are reported as being heavily booked for deliveries well into June, with little coal available for prompt or early delivery.

Orders placed include heavy bookings for the French State Railways, and 100,000 tons of Monmouthshire large coals for South American railways. The latter is on the basis of about 30s. per ton, f.o.b. The Algerian State Railways are in the market for 60,000 to 90,000 tons of patent fuel for delivery between June and November.

Statistics showing exports of coal during the week ended May 19, follow in tons:

	Tons
From the Tyne district	5,850
From the Mersey district	9,995
From the South Wales district:	
To the United States	8,921
To Canada	32,021

Hampton Roads Movement Slow

Movement at Hampton Roads last week was slow, the diversion of coal to the West by rail having cut down supplies to some extent. Vessels did not arrive up to schedule, and all lines of the trade fell off.

Export business was not up to expectations, while the coastwise trade showed a marked reduction. Bunker business was slightly below the previous week.

The tone of the market was dull, and shippers were not looking forward to any distinct revival in business during the next few weeks. They expect contracts to be asked for about the middle of June, to become effective July 1. The outlook for continued export business, to South America and France, was bright, according to shippers.

Saar Mine Strike Settled

The strike of the 50,000 coal miners in the Saar Valley has been settled according to a press cable received in this country, the men returning to work on May 16 under an agreement providing for an increase in wages ranging from 3 to 5 fr. Soon after the strike began the League of Nations Commission which administers the Saar, according to the dispatch, offered the men an increase in wages, but the offer was refused, the men insisting on their demand that the Ruhr be evacuated. It is likely that it will be at least a month before the first shipments of coal from the district will arrive in France.

French industrial coals are in better supply, although the mines in the Nord and Pas-de-Calais are heavily booked for the May output.

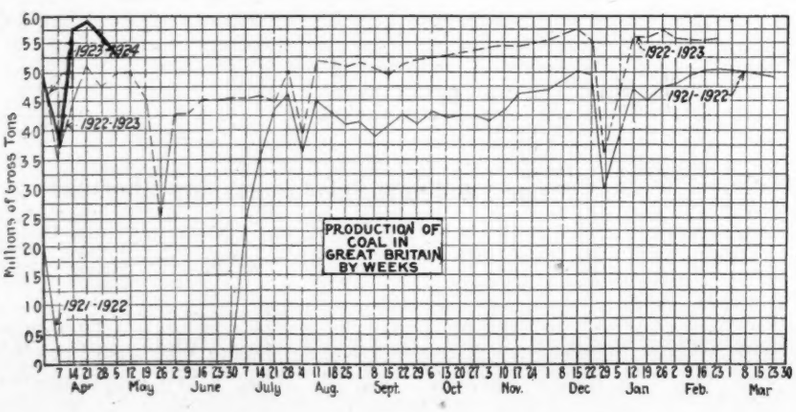
Production during March amounted to 3,012,116 metric tons of coal, 149,285 tons of coke and 262,316 tons of patent fuel.

During March and up to April 20, France received from Germany 76,000 metric tons of coal, 78,800 tons of coke and 6,700 tons of lignite briquets.

Although 109,200 metric tons of Ruhr coke consigned to the Societe des Cokes de Hauts-Fourneaux passed Ehrang station between April 1 and April 30 the French Minister of Public Works has urged French Metallurgists to stock up one-third of the coke they receive from the Ruhr until they have reserves aggregating 250,000 tons.

Production of coke from French collieries ovens is increasing. In the Nord and Pas-de-Calais coal fields it amounted to 97,800 tons in March, as compared with 47,300 tons in October of last year. Out of the March production the Crespin and Douchy collieries supplied to French Metallurgists 28,000 tons and they received from the other collieries about 35,000 tons, the balance going to foundries and other industries. It is expected that by the end of the year the collieries, not including Crespin and Douchy, will be delivering monthly to French blastfurnaces 60,000 tons of coke and by the end of 1924, 110,000 tons.

Two batteries of ovens amounting to 110 ovens are about to be started, while four other batteries are in course of construction, one to be ready in July, one in September and the remaining two toward the end of the year or the beginning of next.



Export Clearances, Week Ended May 12, 1923

FROM HAMPTON ROADS

	Net Tons
For Argentine:	
Du. SS. Vechtdijk, for Puerto la Plata	5,108
For Brazil:	
Br. SS. Clearpool, for Rio de Janeiro	5,577
For Canada:	
Br. SS. Twickenham, for Montreal	7,625
For Cuba:	
Nor. SS. Albatross, for Havana	4,834
Nos. SS. Steinstad, for Sagua de Tanamo	317
For Italy:	
Jap SS. Egypt Maru, for Porto Ferrajo	8,560
Ital. SS. Bampton, for Porto Ferrajo	6,518
For Mexico:	
Nor. SS. Crissy, for Vera Cruz	3,349
For Uraguay:	
Br. SS. Shelley, for Montevideo	6,481

FROM PHILADELPHIA

For Cuba:	
Am. Schr. James W. Coburn, for Cay Francis	...
For France:	
Du. SS. Zosma, for Dunkirk (coke)	...

UNITED STATES JANUARY COAL IMPORTS

(In Gross Tons)

	Jan., 1922		Jan., 1923
Anthracite	116		11,331
Bituminous	111,037	free	158,048
		dutiable	179,601
Imported from:			
United Kingdom	17,025		142,349
Canada	82,263		179,639
Japan	2,075		.....
Australia	9,674		11,525
Other countries	.....		4,136
Coke	6,051		8,307

Hampton Roads Pier Situation

	May 10	May 17
N. & W. piers, Lamberts Pt.:		
Cars on hand	828	1,135
Tons on hand	51,724	71,137
Tons dumped for week	113,678	90,159
Tonnage waiting	16,000	1,700
Virginian Ry. piers, Sewalls Pt.:		
Cars on hand	1,509	1,487
Tons on hand	87,130	84,470
Tons dumped for week	132,741	129,109
Tonnage waiting	38,100	14,346
C. & O. piers, Newport News:		
Cars on hand	2,096	1,543
Tons on hand	108,525	90,660
Tons dumped for week	74,119	78,926
Tonnage waiting	5,250	11,695

Pier and Bunker Prices, Gross Tons

PIERS

	May 12	May 19†
Pool 9, New York	$5.75@$6.00	*$5.50@$5.75*
Pool 10, New York	4.90@ 5.50	*4.50@ 5.25*
Pool 11, New York	4.00@ 4.75	*4.00@ 4.50*
Pool 9, Philadelphia	6.15@ 6.60	*5.90@ 6.35*
Pool 10, Philadelphia	5.20@ 5.60	*5.00@ 5.55*
Pool 11, Philadelphia	4.20@ 4.60	*4.10@ 4.55*
Pool 1, Hamp. Roads	7.00	7.00
Pools 5-6-7, Hamp. Rds.	5.50	*5.25*
Pool 2, Hamp. Roads	6.75	6.75

BUNKERS

Pool 9, New York	6.05@ 6.30	*5.80@ 6.05*
Pool 10, New York	5.20@ 5.80	*4.80@ 5.55*
Pool 11, New York	4.30@ 5.05	*4.30@ 4.80*
Pool 9, Philadelphia	6.50@ 6.70	*6.15@ 6.35*
Pool 10, Philadelhia	5.40@ 6.00	*5.15@ 5.95*
Pool 11, Philadelphia	4.50@ 5.00	*4.30@ 4.90*
Pool 1, Hamp. Roads	7.00	7.00
Pool 2, Hamp. Roads	6.75	6.75

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to *Coal Age*

	May 12	May 19†
Admiralty, large	39s.@40s.	**40s.@42s.**
Steam, smalls	30s.	**32s.6d.**
Newcastle:		
Best steams	34s.@35s.	*32s.6d.*
Best gas	32s.6d.@35s	32s.6d@35s.
Best bunkers	35s.@35s.6d.	*34s.@35s*

† Advances over previous week shown n **heavy type**; declines in *italics*.

News Items From Field and Trade

ALABAMA

The fifth annual statewide first-aid field meet will be held at Birmingham, July 21, under the auspices and direction of the Alabama Mining Institute and the U. S. Bureau of Mines. A large number of teams from the different mining companies and other industrial plants will participate in the meet, the program of events, prizes, etc. now being in course of preparation.

The first application for a coal lease on public lands in the State of Alabama has been made to the Department of the Interior, affecting 1,840 acres of land located near Carbon Hill, Fayette County. The tract is estimated to contain seven million tons of high-grade bituminous coal, lying in what is known as the "Jagger bed." It is a non-coking coal, but is especially adapted to domestic use, analyses made by the Bureau of Mines showing an average heating value of 12,577 B.t.u. Application for the lease has been made by a coal company of Memphis, Tenn. Should this company be the successful bidder it agrees to pay to the federal government a royalty of 10c. per ton mine-run of coal produced, guaranteeing a production of 20,000 tons per annum beginning with the fourth year and obligating itself to invest $25,000 per year during each of the first three years in coal-production plant and equipment. The coal-leasing privilege on this land will be sold by the Interior Department under the above conditions some time in June to the bidder offering the highest cash bonus at public auction at the land office at Montgomery. The exact date of this auction will be announced within the near future.

ILLINOIS

The Rentchler mine of the Missouri-Illinois Coal Co., at Rentcher, Ill., **has been ordered closed** by State Mine Inspector James R. Richards. The company has been ordered to equip the airshaft with a ladder. The company has also been instructed to increase the amount of air pumped into the mine.

The mine of the **Jeffrey Coal Co.** at Herrin **suffered a loss by fire** recently when the **timbering in the shaft was almost totally destroyed.** The timber was new, the mine having been shut down some time ago for the purpose of retimbering the shaft and the work had been completed to within a few feet of the surface.

Governor Len Small told the Illinois legislative investigating committee last week that neither he nor Adjutant General Black nor Colonel Sam Hunter ought to be blamed for not sending state troops to stop the Herrin massacre of June 22, 1922. He blamed the sheriff and county authorities of Williamson County and said that, judging from the reports furnished him, right up to the morning of the slaughter of 21 non-union miners by a mob there was no need for troops. The committee has found that many of the important witnesses it wanted to call from Williamson County have "disappeared" and probably will stay out of sight until adjournment of the Legislature, when the committee's authority ends.

A. C. Linberg has joined J. M. Crom in representing the **Cement-Gun Co.** in the Chicago district. Mr. Linberg, formerly with Fred T. Ley Co., Inc., and with the Thompson-Starrett Co., has had wide experience in sewer and dam construction. The Cement-Gun Contracting Co. is now taking contracts not only for Gunite work, but also for the building of reservoirs, dams, levees and the like.

Too many mines and too much labor trouble are the most serious afflictions of the soft-coal industry, according to Conrad B. Spens, vice-president of the Chicago, Burlington & Quincy R.R. and formerly Federal Fuel Distributor, writing in the *Illinois Journal of Commerce*, the publication of the Illinois Chamber of Commerce. Soft-coal production increased 37 per cent between 1910 and 1920, Mr. Spens says. While in that period the railroads increased their coal-car tonnage 42.5 per cent they were obliged to divide their cars among 6,800 more mines in 1920 than in 1910. With fewer mines there would be better transportation and with fewer labor troubles there would be continuous production, Mr. Spens said.

INDIANA

The Bankers Trust Co., of Indianapolis, receivers for the Steele-Kattman Coal Co., has announced that all creditors of the defunct company are required to file their claims with the receiver on or before June 1.

The Joan Collieries Co., an Ohio corporation, has qualified to do business in Indiana with a capital stock in this state of $50,000 as represented by the stockholders. David E. Rowland, a well-known coal man of Terre Haute, has been named state agent.

The Wabash Coal & Oil Co. of Terre Haute, has filed a final certificate of dissolution. **The Glendale Coal Co.,** also of Terre Haute, has filed a similar document with the Secretary of State.

Contracts for providing the 1923-24 coal supply to Indiana state institutions, 140,775 tons in all, **have been awarded** by the State Purchasing Committee to the **Tope Coal Co.** and **Ogle Coal Co.,** both of Indianapolis; **Walter Bledsoe Coal Co.,** of Terre Haute, and **Ayrshire Coal Co.,** of Oakland City, according to Fred B. Robinson, secretary of the committee. One or two small contracts yet may be made, but the great bulk of the supply is covered by the deals just completed. The contracts call for $2.40 a ton for mine-run Indiana No. 4 shaft coal; $2.05 for No. 4 screenings; $2.65 for egg size; $1.25 for 4-in. screen; $1.90, pea and slack, No. 5 coal, and $2.20 washed pea and slack, Mr. Robinson said. The prices are to prevail until April 1, 1924, when miners are to negotiate with operators for a new wage scale.

A drop in coal prices for the summer months has been announced by most of the dealers in Evansville. It is expected similar decreases for summer delivery will be made now in most of the cities of that section of the state. **Prices quoted at Evansville are:** Lump coal, 20c. a bushel; nut coal, 20c.; mine-run, 18c. During the winter months the prevailing price for lump and nut coal was 23c.

Two practical coal miners and two experienced coal operators were appointed members of the **Indiana State Mining Board by Governor McCray** in organizing the new State Department of Mines and Mining which was created by the last session of the General Assembly. The mine inspection work of the state was formerly a division of the state industrial board. John Hessler, of Terre Haute, president of district No. 11, United Mine Workers of America, and William Mitch, of Terre Haute, a miners' official, were appointed as the coal miners on the new state board. William Johnson, of Vincennes, and John A. Templeton, of Terre Haute, are named as the coal operators. Mr. Hessler and Mr. Johnson were appointed for two years, while Mr. Mitch and Mr. Templeton will serve for four years. Cairy Littlejohn has been appointed chief mine inspector by the Governor. Mr. Littlejohn has been state mine inspector under the industrial board.

Articles of incorporation for the Indiana Coal Merchants' Service Bureau, Inc., of Indianapolis, which is composed of the membership of the Indiana Retail Coal Merchants' Association and which will give statistical and other service to its subscriber members have been filed with the Secretary of State. The bureau was capitalized at 100 shares of no par value. Directors are: R. R. Yeagley, secretary of the coal dealers' association; Martha A. Yeagley and Frank D. Roberts. The establishment of the service bureau was decided on at the final session of the spring convention of the association in April in Indianapolis. Annual meetings of the subscribers to the service bureau will replace the conventions of the association.

KENTUCKY

Announcement was made at Hazard May 4 of a contract let for the **construction of a Whitesburg to Harlan roadway, connecting the Hazard and Harlan coal fields by road.**

J. E. Johnson has succeeded the late Richard V. Hord as secretary of the Hazard Coal Operators' Association.

MASSACHUSETTS

The special Massachusetts Legislative Commission appointed to investigate the coal situation **held its first session** on May 10 at the State House in Boston. Congressman Treadway, the first witness, declared that New England is the subject of discrimination as in favor of longer hauls. He suggested an investigation of the question of royalties, noting particularly the Girard estate, and also raised the question of profits accruing to independent companies. The questions of standards of quality and of substitutes were suggested as subjects which might yield valuable results upon close investigation. As to government ownership, he declared himself decidedly opposed to any such plan. The coal dealers declared that the new pure coal law is responsible for some shippers refusing to send coal here. B. Preston Clark, of the Associated Industries, declared that the situation here is chaotic and that there is now a great shortage of coal, which ought to be relieved as speedily as possible.

MISSOURI

A controlling financial interest in the **Devoy & Kuhn Coal & Coke Co., of St. Louis, has been acquired by Chas. A. Wall and associates.** Mr. Wall is chairman of the board and his son, W. P. Wall, president of the firm. S. W. Innes and J. Weinberg, appointed as vice-presidents, will have charge of sales and purchases.

NEW YORK

The Webster Mfg. Co. of Chicago announces the appointment of **Robert T. Pierce as manager of the company's New York sales office** at 90 West Street. He succeeds the late Glen N. Porter, whose death occurred March 31, 1923.

Emil Greenberg, chairman of the Bath Beach Community Council, Brooklyn, has sent a letter to President Harding, asking that **action be taken "which will insure for the future an uninterrupted supply of coal** to the public at reasonable prices." The letter declares that the coal operators "deliberately created a shortage," that "rubbish from the culm piles" was sold by "the coal barons and profiteers," and that much suffering resulted.

Sealed proposals will be opened by the Superintendent of Lighthouses, Staten Island, 2 p.m., May 28, 1923, for approximately 3,100 tons of bituminous steam coal during July, August and September, 1,800 tons trimmed in vessels' bunkers as required under coal chute New York Harbor; 300 tons for vessels at New London, Conn., and 1,000 tons delivered in 500-ton lots by barge alongside Lighthouse Depot, Staten Island. Information on application.

PENNSYLVANIA

Thirty-two ovens at the Farrell byproduct coke plant of the Carnegie Steel Co. **have been fired up** after a two-year shutdown. The remaining 182 will be charged as soon as possible.

Two hundred applicants took the examination for second-grade mine foremen at Cresson during the second week in May before an examining board of which Joseph Williams, mine inspector of Altoona, was the chairman.

Fifteen tracts of coal land, in addition to those purchased recently, have been acquired by the Pennsylvania Coal & Coke Corporation in northern Cambria County. The entire deal is said to involve the expenditure of a million dollars.

The washery and tipple of the Keystone Coal & Coke Co. at Salemville **was destroyed by fire** May 5, causing damage estimated at $100,000. It was announced that coal mined at Salemville would be taken by an underground route to the Huron plant of the company and that it would be put through the washery at the latter place and then returned to Salemville to be made into coke.

Examinations were held in Johnstown during the second week in May by the state mining board, composed of Nicholas Evans, inspector; George W. Wilkes, operator, and Robert Joves, miner. A total of 128 miners took the examination for second-grade mine foremen, one of the largest classes ever examined in Johnstown. The 6th, 24th and 30th districts were represented.

George W. Wilkes, superintendent of the Eureka mines Nos. 30, 31, 39 and 40 of the Berwind-White Coal Mining Co. for the past seven years, has tendered his resignation. Mr. Wilkes is a mine superintendent of wide experience, beginning his work in England 47 years ago, and working in western and central Pennsylvania for thirty years. He will remain in Windber.

Twenty ovens at the Grace plant of the Corrado-Schenck Coke Co. at Moyer **were recently overhauled and fixed up after an idleness of more than a year.** Coal will be supplied from a new opening, a sufficient quantity being available to keep the operation running for some time. The plant, built and operated for many years by W. J. Rainey, was acquired by the Corrado interests about two years ago.

The bill compelling anthracite companies to sell coal to churches, schools and charitable institutions in the communities where the coal is mined, has passed the Senate and is now in the hands of the Governor. The bill is the outgrowth of Olyphant's experience last winter, when the Hudson Coal Co. refused to sell coal to keep the schools and churches open. The citizens answered this by confiscating several cars of coal that stood on a siding.

Future polices of union labor in Somerset County are difficult to determine since Judge John A. Berkey granted an injunction the equity suit filed by the Quemahoning Creek Coal Co. against officers and individuals of District No. 2, United Mine Workers. Two hearings were held and the injunction continued indefinitely. Union activities are prohibited in the Quemahoning field and the final decision doubtless will determine action of other non-union operating companies in the Somerset County field, of which there are many.

Representatives of organized labor appearing before the Senate Judiciary General Committee May 9 **urged passage of the amendments to the Workmen's Compensation act** sponsored by Senator Joyce, Luzerne, whose bill would increase the maximum weekly compensation from $12 to $16 and the number of weeks during which compensation would be paid for disability. Opposition to the measure failed to materialize at the meeting, but it was stated by a member of the committee that anthracite and bituminous operators would file briefs with the committee, setting forth their objections to the bill.

An accident, probably due to an air blast, at the No. 10 colliery of the Lehigh Coal & Navigation Co., near Lansford, May 4, **resulted in three men being killed and six injured,** one of them seriously. J. B. Warriner, general manager of the company, stated that the first reports that the accident was due to a gas explosion are not true as far as the preliminary investigations have disclosed. There was a rush of air in a new level at the No. 10 colliery that flung the men about, one sustaining a fractured neck, another a fractured skull, a third was badly bruised and lacerated. The other men also report that there was a terrific rush of air that lifted them from their feet and threw them down. The source of the rush has not been determined, it being impossible to penetrate to the top of the breast, where they were at work, to complete the investigation.

Five hundred men at the Buttonwood colliery of the Lehigh & Wilkesbarre Coal Co., near Wilkesbarre, **went on strike** on May 14 following a dispute over the quality of blasting powder furnished by the company. **The men returned to work on Wednesday.** Four hundred men at the Laurel Run colliery of the Hudson Coal Co. went on strike when one union man was discharged. The total loss of output in both strikes is 1,500 tons daily.

The Wilkes-Barre City Council agreed May 15 to draw up an agreement and **execute a lease for the sale of the coal under the river common to** James J. Powell, a Scranton attorney, at his bid of 52c. per ton.

Governor Pinchot on May 10 approved the bill of Representative John K. Post, Washington County, relieving life tenants of land from the payment of taxes on the underlying veins of coal which they have no right to operate. The new law, which is the first of the series of coal bills before the Legislature to be signed, provides that such coal shall be assessed to and the taxes paid by the owner of the veins of coal.

More than 1,600 miners employed by the Jeddo-Highland Coal Co. in the Hazelton district walked out May 14 **in protest against the company's refusal to advance the hour of paying off** so the men will not have to stand around in wet clothes waiting for their money. The company announced that no concessions would be made and that the matter will be taken to the Anthracite Conciliation Board. They claim that under the eight hour day the miners should not finish work until 3:30 p. m. The men announced that they will tie up all the collieries every pay day until the change is made.

Another big transaction in coal lands involving over 1,000 acres has just been put through in Cambria County. The price is said to be $1,000,000. **The holders of the Davis-Long Coal Co. in Cambria township have just been sold to J. H. Weaver,** of the Ebensburg Coal Co., which already has a large acreage now under operation at Colver. This is the territory that was the cause of considerable litigation between the Davis-Long company and Charles N. Blanchard, of Binghampton, N. Y. The new owner will open a mine and start a new town several miles west of Ebensburg.

The Davis-and the Fowler mine-cave bills in the House Committee on Mines and Mining probably will follow the series of other bills before the Legislature this year which have as their object the return of part of state taxes to the municipalities in which they are collected. With the collapse of the taxation program in the House there is little chance, if there ever was any, for a return of moneys collected for state purposes to their source. The mine-cave bills provide for a return of a portion of the anthracite tonnage tax to coal producing municipalities for general purposes for the repair of damages caused by mine caves. Representative Fowler and Representative Whiteman, chairman of the House Committee on Mines and Mining, saw Governor Pinchot about the bills on May 15 and the Governor told them that in view of the lack of finances he could not see how he could sign the bills if they reached him.

Shipments of anthracite during April, 1923, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 6,173,774 gross tons as compared with 7,183,518 gross tons during the preceding month of March, a decrease of 1,009,744 gross tons or 14.06 per cent. This decrease is partly due to fewer actual working days during the month of April and to operations being almost entirely suspended on the Eight-hour Day, April 2. Continued button strikes also contributed to the decreased production. Comparison with the month of April last year cannot be made on account of entire suspension of operations pending new wage agreement, which was signed Sept. 11, 1922. Shipments by originating carriers were as follows:

	April 1923	March 1923
Philadelphia & Reading	1,170,925	1,370,476
Lehigh Valley	1,088,783	1,279,599
Jersey Central	508,683	622,710
Dela., Lackawanna & Western	906,203	1,146,217
Delaware & Hudson	851,960	907,099
Pennsylvania	527,139	542,167
Erie	647,707	818,817
N. Y., Ontario & Western	146,985	192,247
Lehigh & New England	325,389	304,186
Totals	6,173,774	7,183,518

One of the largest hearings of the present legislative session was held May 9 on the Smith and McNichol bills aimed at stopping further stream pollution. The Senate Health and Sanitation Committee held the hearing and speakers of the bill included representatives of water companies, conservationists, sportsmen and state officials of the Health Fisheries and Labor and Industry Departments. F. D. Patterson, representing the Manufacturers' Association; Charles O'Neil, secretary of the Pennsylvania Coal Operators' Association; James Campbell, chemist for the Frick Coal & Coke Co.; Clayton Snyder, Pittsburgh steel interests, and J. N. Chester, Pittsburgh, opposed the bills. They contended they are unnecessary, for chemists of the coal and steel companies are working on filtration plans to stop pollution. The Smith bill prohibits pollution of all streams not now contaminated, while the McNichol measure prohibits pollution of water supplies at their source.

UTAH

The U. S. Land Office at Salt Lake City has been directed by the Secretary of the Interior **to offer for lease two tracts of public coal land** in Utah, one containing 400 and the other 440 acres. The land is in Sevier County about 40 miles northeast of Richfield and is accessible to the branch of the Denver & Rio Grande R.R. running from Salt Lake City to Marysvale. Lease for each tract will be at a government royalty of 10c. per ton for coal mined, a minimum investment in mining operations of $35,000 during the first three years of the lease, and a minimum production of 12,000 tons of coal a year beginning with the fourth year of the lease. The sale of the leases will be made by public auction at the Salt Lake City land office on a day to be fixed later. Privilege will be given to bidders to obtain one lease covering both tracts.

It has been announced that the **Utah Fuel Co.'s coal camps in Carbon County will all make connections with the Utah Power & Light Co.'s high-tension lines for power service.** This is taken to indicate that the much discussed plan to build a central power plant near Price to generate electric power with local screenings for fuel has been abandoned.

VIRGINIA

Trial of suits aggregating nearly half a million dollars filed by the Norfolk & Western Ry. against coal companies which have agencies at Norfolk, for alleged demurrage charges over a varied period running back nearly to the war, **will begin in the City Circuit Court at Norfolk, May 25.** The railroad claim for demurrage is denied by the companies, which charge that the railroad assessed demurrage on improper schedules. The companies which are defendants in the suits, and the amounts in each case, are: Panhandle Coal Co., $3,286 28; Nottingham & Wrenn Coal Co., $15,000; C. H. Sprague & Co., $58,129.28; Smokeless Fuel Co., $21,870.28; Raleigh Smokeless Fuel Co., $17,636.50; Dexter & Carpenter, $1,990; West Virginia Coal Co., $2,183.06; Jewett, Bigelow & Brooke, $46,320; Algonquin Coal Co., $124,012.62; Eastern Coal & Export Corp., $29,409.66; George E. Warren Corp., $2,072.20; Matlack Coal & Iron Corp., $8,640.26; William-Cory-Mann-George Corp., $8,826.02; Kentenia Coal Co., $242.14, and Fort Dearborn Coal & Export Co., $5,219.82.

WEST VIRGINIA

The Horse Branch Coal Co. and the **Black Diamond By Product Coal Co.** have been dissolved as corporations.

The following West Virginia coal concerns have increased their capital stock in the amounts given: Raleigh-Wyoming Coal Co., from $3,500,000 to $4,100,000; **Elm Grove Mining Co.,** from $2,000,000 to $2,400,000; **Hite-Barns Coal & Coke Co.,** from $200,000 to $300,000; **Mordue Collieries Co.,** from $750,000 to $1,250,000; **Fort Grand Coal Co.,** from $100,000 to $500,000.

The United Workmen Collieries Co., organized under the laws of Delaware, has been authorized to transact business in West Virginia.

A jury in the Federal Court of the Southern District of West Wirginia has **nullified the claims of C. L. Stickel to the lands owned by the Big Laurel Coal Co.** in Boone County. The case was an action in ejectment, Stickel claiming title to the land. The case is one of those involved in the government case now pending against a number of defendants in Omaha, Neb.

Another mine will soon be opened by the Pocahontas Fuel Co. in the Wyoming County field, not far from the Itmann mine in Wyoming County, on the line of the Virginian Ry. It will be necessary for the Virginian to extend its line in order to afford shipping facilities. There are about 2,000 acres in the tract, which the Pocahontas Fuel Co. will begin to develop. The company is making extensive improvements at Pocahontas, having begun the erection of a number of dwellings for the use of company officials and the clerical force of the company.

The Fairmont & West Virginia Coal Co., which was recently organized by Robert Y. Brown and others **will have offices in Fairmont,** New York, Pittsburgh, Cleveland and other cities. Opening of the offices in Fairmont follows the recent purchase of the Shadybrook mine of the Banner Coal Co. on the line of the Western Maryland in the Fairmont region. The company will have as its local representative, it is understood, Harry MacAlarney of Ebensburg, Pa. A. L. Black is to be the superintendent of the Shadybrook mine, the capacity of which will be increased by numerous improvements and the installation of much new equipment.

By agreement between counsel representing the state and the defense, **the trial of C. Frank Keeney,** president of the District 17 United Mine Workers; **Fred Mooney,** secretary-treasurer of the same organization, and **William Blizzard,** president of sub-district 2 of District 17, **will be begun in the Circuit Court of Greenbrier County at Lewisburg, on June 18,** that date having been fixed May 19 by Judge Summers H. Sharp. Keeney, Mooney and Blizzard were indicted for complicity in the armed march against Logan and Mingo counties in the fall of 1921 and are now charged with being accessory to the slaying of several Logan County deputies during the outbreak of 1921. Judge Sharp has continued the term of Circuit Court in Greenbrier County for the purpose of trying the defendants.

The Helmick bill creating the West Virginia School of Mines has been approved by the Governor. The new law creates a school of mines to be on the same footing with the school of arts and sciences and other schools at the West Virginia University. It provides that there shall be a department of mining engineering, mining geology, chemical engineering, mining extension, etc., and that a suitable staff of instructors as well as a dean shall be appointed. The new law also provides that a suitable building shall be erected. The location of the new school of mines has not been definitely determined upon, that being left to a commission of five members to be appointed by the Governor.

In the list of West Virginia concerns whose capital stock has recently been increased are: **Long Coal Mining Co.,** of Clarksburg, from $50,000 to $200,000; **Bear Run Coal Co.,** from $5,000 to $25,000; **Coal River Collieries Co.,** from $2,000,000 to $2,500,000; **Standard Thacker Coal Co.,** from $25,000 to $150,000; **Vulcan Coal Co.,** from $50,000 to $200,000; **Smith Pond Creek Coal Co.,** from $50,000 to $150,000.

The Middle West Coal Co. has reduced its capital stock from $200,000 to $53,750, and the **Aetna Sewell Coal Co.,** from $2,000,000 to $1,000,000.

A compromise has been reached out of court **in the suit between the Matthew Addy Steamship and Commerce Corporation and the Raleigh Smokeless Fuel Co.,** which was being tried in the federal court for the southern district of West Virginia and in which $464,000 in all was involved as a result of the suit and counter suit. The Matthew Addy Corporation had instituted suit for damages to the amount of $364,000 for alleged breach of contract and on the ground that the Raleigh company had failed to make deliveries according to contract. The Raleigh Smokeless Fuel Co. also had a suit against the Matthew Addy Corporation pending in which damages were asked in the sum of $100,000 for alleged failure to accept the delivery of coal.

Following a visit of Colonel C. W. Watson, president of the Consolidation Coal Co., to that company's properties embraced in the New River-Pocahontas division, it became known that **improvements costing about $5,500,000 are contemplated.** The properties to be improved are located in McDowell County and were acquired a few months ago. Since the Consolidation took over the smokeless properties in southern West Virginia it has been engaged in making many improvements and in maturing plans for further improvements, all with a view to increasing the capacity of mines.

The Atlas Coal & Coke Co., of Chicago, of which L. Romanski is president, has opened an office in the Masonic Temple Building, Charleston, with E. W. Tildesley in charge. The tidewater and Western business of the company will be handled through the new office.

The Elkland Coal Mining Co., which has headquarters at Columbus, Ind., will soon increase the capacity of its mine on the Charleston division of the B. & O. by the installation of a larger tipple, scales and shaker screens. It is hoped to double the output soon. D. C. Hitt, of Columbus, is president and I. D. Lyons, of Columbus, secretary and treasurer.

WASHINGTON, D. C.

I. W. W. interests will soon be operating a coal mine in this state, judging by the fact that Elmer Smith, of Centralia, an I. W. W. leader, has filed articles of incorporation for the Smith Coal Co. to operate a mine near Mendota. The company is capitalized at $18,000.

During the absence in Europe of George S. Rice, chief mining engineer of the Bureau of Mines, and until further notice, **James W. Paul will be acting chief mining engineer,** with headquarters at Washington. **C. A. Herbert is detailed to Pittsburgh to serve as acting chief coal mining engineer,** beginning June 1 for a period of five months, and will report through the superintendent of the Pittsburgh Station to Mr. Paul. He will have immediate charge of the Experimental Mine work and other coal-mining investigations, except the coal waste inquiry for the U. S. Coal Commission, which work will be handled directly by Mr. Paul. **H. I. Smith will continue as mining supervisor** and will report through the Assistant to the Chief Mining Engineer on administrative matters, consulting with the Acting Chief Mining Engineer on technical matters.

The U. S. Bureau of Indian Affairs, Department of the Interior, **invites bids on approximately 46,100 tons of bituminous coal and 2,100 tons of anthracite** for the use of the Indian Service during the fiscal year ending June 30, 1924. Bids will be opened 2 p.m., June 4. Schedules giving all necessary information will be furnished upon application to the Indian Office, Washington, D. C., or the U. S. Indian Warehouses at Chicago, St. Louis and San Francisco.

CANADA

The Princeton Coal & Land Co., which owns extensive coal areas near Princeton and much real estate in that city, **is being taken over by Yorkshire and Lancashire coal mining interests,** and in future is to be operated on a much more extensive scale. F. W. Glover, who has been superintendent of the mine for many years, has been made general manager. The company has been in operation for some years, and last year it produced close to 20,000 tons of coal. The coal is unusually high in volatile combustible matter, average analyses running 44 per cent volatile, 50 per cent fixed carbon and 5 per cent ash. The sulphur content averages about 0.5 per cent.

At a recent conference Mayor Macguire told the Toronto coal dealers that if they could not guarantee that there would be no shortage of fuel as there was last winter **the city would go into the coal business again.**

Four thousand miners in the Glace Bay coal fields voted May 18 **to call a strike if the provincial police make further raids upon the homes of the United Mine Workers** in their search for seditious literature. The arrest of any of those whose homes already have been raided also would be the signal for a strike, it was said.

Denial of an agreement between the Canadian National Railways and the Canadian Pacific Ry. **fixing an early summer rate of $9 a ton on coal** from points in Alberta to Toronto was made by E. P. Mallory, of the C. N. R., before the Mines and Minerals Standing Committee at Ottawa. A net cost of $9.90 for handling coal from Lethbridge, Alta., to Toronto was given by W. B. Lannigan, general freight traffic manager of the C. P. R., in testimony before an investigating committee.

In a report just issued by the fuel investigating committee of the Engineering Institute of Canada on the fuel situation throughout the dominion it is stated **"that the American anthracite must be regarded today as 'luxury' fuel** in that a high price is paid for acquired habits of use. Welsh anthracite and metallurgical coke, particularly, are much better fuels in that they give more heat for less money, are easy to handle, and have very little ash."

Association Activities

Monongahela Coal Association

The Monongahela Coal Association at its May meet in Morgantown, W. Va., not only made arrangements to be officially represented at the National Coal Association gathering in Atlantic City on June 19, but also discussed informally some of the problems affecting the Monongahela Valley coal region. President John H. Jones, who recently negotiated a merger of a number of coal companies in Pennsylvania and West Virginia, and Secretary C. D. Junkins are to be the official representatives of the association to the National Coal meeting.

Smokeless Coal Operators Association

At its meeting in the Waldorf-Astoria Hotel in New York on May 10, the Smokeless Coal Operators' Association gave its attention to transportation. Looming up at no distant date, it was stated, is an effort of Pittsburgh and Ohio operators to bring about changes in present freight differentials on West Virginia coal in so far as shipments to the Great Lakes are concerned. If such a move should be successful, it was the impression at the meeting, it would place a discriminatory rate against West Virginia shippers of 36c. per ton and would prevent the industry in West Virginia from moving any coal except that which could not be obtained elsewhere. Among those present were Messrs. Caperton, Collins, Crocket, Deyerle, Ellison, Farrell, Fobes, Gross, Houston, Higgins, Jones, Johnson, Koepler, Lawton, Machnicht, Lewis, Morfit, Phillips, Tams, White, Burrows, Adams, McKee and Wolfe. President Robert H. Gross acted as chairman of the meeting. George Wolfe, secretary of the Winding Gulf Association, was the secretary.

Obituary

Archibald MacDonald, widely known in Glace Bay, B. C., died at his home there May 14 after an illness that lasted nearly three years. He was 73 years old. Born at River Dennys, Mr. MacDonald at an early age went to the Glace Bay district, where he worked for the past half century as a miner in various collieries throughout the district.

Eastern Kentucky operators were very sorry to hear of the sudden death at Lexington, Ky., of **Richard V. Hord,** 45, of Lexington, who for five years or more was secretary of the Hazard Coal Operators' Association until he resigned on account of ill-health about the first of this year. Death on May 7 was due to a stroke of paralysis on the 5th. Mr. Hord was a native of Mason County, and for years had been active in eastern Kentucky coal circles. He had some holdings of his own, principally undeveloped properties.

Thomas Hudson, for thirty years a district mine inspector in Illinois, died at the St. Francis Hospital, Kewanee, May 7, at the age of 77 years, lacking fifteen days. Though always of a rugged strong constitution, Mr. Hudson's health had been failing for some time previous to his being taken to the hospital two weeks before his death. He was born in England, May 22, 1846, but came to this country more than fifty years ago, forty of which he has been a resident of Galva, which was his home at the time of his death. For the past three years he served the state as a member of the Mine Investigating Committee. Mr. Hudson was a charter member of the Mine Inspectors' Institute of America and held the office of treasurer of the Institute for three years following its organization in 1908. Taking a deep interest in politics, he served his home town as Mayor and Alderman. Mr. Hudson is survived by his wife and six children, all of whom were present at his bedside when he died. He had a large circle of mining friends.

Traffic News

The petition asking for authority to continue rates on bituminous coal from mines in the State of Ohio to certain points in Indiana, without regard to the fourth section, will be considered at an Interstate Commerce Commission hearing in Pittsburgh, May 28.

The Colorado and New Mexico Coal Operators' Association has assailed the freight rates from producing districts in Colorado and Northern New Mexico, alleging that they have been made without reference to any set plan or system, are full of inconsistencies and are being subjected to constant changes, arbitrarily made, without regard to the rights of producers in other districts. The association declares that its members have been subjected to unlawful discriminations and excessive charges and that it is necessary that the Interstate Commerce Commission establish maximum and minimum rates from the various competing districts in that territory. The association insists that each producing district be given full advantage of its geographic location so as to prevent rate wars and discriminations and give stability to the rate structure involved.

On account of embargoes via other routes and to prevent diversions, **an embargo was placed May 11 by the Boston & Maine R.R.** on all carload freight from the Rutland R.R. at all junctions for movement to or via the Boston & Maine, except carload freight originating on the Rutland, livestock, perishable and railroad supplies, including company fuel.

Members of the Alabama Utility Commission were in session in Birmingham for several days recently **hearing arguments from producers of coal,** ore and other commodities and the consumers of such raw material and the representatives of the several railroads regarding adjustments to be made in freight rates. It is understood that changes carrying in the main reductions in such rates will be arrived at. The discussions hinged for the most part on whether the zoning system of rate-making should remain in force or rates computed on a mileage basis.

The Interstate Commerce Commission has dismissed the complaint of the Little Fork Coal Co., Willard, Ky., in which claim was made for reparation on various shipments of coal on which it was claimed unreasonable rates had been charged.

Reparation has been awarded the C. Reiss Coal Co., to cover overcharges on 134 carloads of anthracite shipped from Pittston, Dunmore and Avoca, Pa., to St. Paul and Minneapolis.

Linn Chapel and Kendall Brothers, retail coal dealers in Elmira, N. Y., **have attacked the rates on anthracite in effect via the Pennsylvania R.R. from points on its line in the Shamokin district to Elmira.** The complainants also **object to the failure of the Lehigh Valley to absorb connecting-line switching charges** at Elmira on such traffic. The commission is asked to prescribe rates of $2.14 and $2.02 per gross ton on this traffic. The present rates are $2.65 and $2.50 on prepared sizes and pea and smaller, respectively.

Operating, mining and production managers from mines in southeastern Kentucky gathered at the Hotel Sinton, in Cincinnati, on May 15 to **take action in opposition to the move made by operating companies of Ohio and Michigan to remove the lake differential from the outer crescent.** Some West Virginia operating men were present at this meeting also and have signified that they will join the movement. The statement was made that the Interstate Commerce Commission some time ago went fully into the plea of the Ohio and Pennsylvania people for the removal of the differential and decided that this as it stood in favor of Kentucky and West Virginia was eminently proper. It was the consensus of the Kentuckians that the differential should be fought for to the last ditch. Among those present were: Arthur Ellison, of Harlan, F. C. Mahan, of High Splint; Gus Whitfield, of Hazard, R. C. Tway, of Louisville; C. W. Boyd, traffic manager for the Appalachia and Hazard Operators associations, E. L. Douglass and G. W. Creech, of Twila.

An increase in the car supply on the Chesapeake & Ohio was reflected during the first twelve days of May by heavier loadings than during the corresponding days of April, the increase amounting to about 3 500 cars, or approximately 175,000 tons. E L. Bock, general superintendent of the western general division of the road, said: "There is a gradual improvement showing in all lines of business and while our problem is not more business but more empty cars, the general situation affects us more or less."

Complaint made by the **C. H. Mead Coal Co.** and other coal companies operating **in Raleigh, Wyoming, McDowell** and other counties in southern West Virginia that the rates for power charged by the **Appalachian Power Co.** were unjust, unreasonable and excessive has been dismissed by the **West Virginia Public Service Commission,** before which the case has been pending since Feb. 21, 1922. The coal companies took the ground that in view of reduced fuel and labor costs as well as reduced material costs, the rates charged by the power company were unduly high. The Public Service Commission in dismissing the complaint without prejudice held that the power company was entitled to receive 8 per cent on its investment and that investigation disclosed the fact that the company was not earning more than $25,000 a year over and above 8 per cent on its investment.

Fred M. Sackett and William S. Speed, of Louisville, controlling the Byrne & Speed Coal Co., Louisville, have just closed a deal which has been authorized by the Interstate Commerce Commission, involving the **sale of the Sackett-Speed-owned Black Mountain R.R. in southeastern Kentucky to the Louisville & Nashville R.R. for $300,000.** The road is 8.29 miles long, running from Blackmont in Bell County, on the L. & N., to Puckett's Creek, in Harlan County. The road boasts of one engine and four cars, along with three mines and daily production of 52 cars of coal. It was built during the war period by Dr. W. H. Frost and associates of Fredonia, N. Y., and has outstanding capital of $108,000 and bonds of $300,000, which were acquired by Sackett and Speed in June, 1921. About $100,000 has been spent on improvement since the Louisville interests secured control.

A total of 10,979 new freight cars were delivered and placed in service by the railroads of the United States in April, according to reports filed by the carriers with the Car Service Division of the American Railway Association. This made a total of 50,151 new freight cars that have been placed in service since Jan. 1 this year. During the month of April the roads also placed orders for 8.303 new freight cars, which brought the total number of freight cars on order on May 1 up to 115,756. Of the new freight cars on order, coal cars numbered 46,194. The railroads also placed in service during April 293 new locomotives, which brought the total number installed during the first four months this year to 1,228. Locomotives on order on May 1 numbered 1,956 compared with 1,974 on April 1.

A final effort to save the Chicago, Peoria & St. Louis railroad from abandonment and the cruel mercies of the junk man is to be made by Peoria, Ill., interests. A petition made by New York bondholders that the road be scrapped and sold for its junk value has been bitterly fought out in the Sangamon County Circuit Court in Springfield, Ill., and has been heard by the Interstate Commerce Commission. The commission's order has not as yet been filed in court, but it does not solve the problem of how to keep the road in operation. Shippers who have been served by the road, including three mines, are trying to solve the problem. The C. P. & St. L. has about 180 miles of track with valuable terminal facilities in Peoria, Springfield and Alton. It has spent the greater part of its life in the hands of receivers. Efforts have been made toward a consolidation of the C., P. & St. L. with the C. B. & Q., Sante Fe, C. I. & W., and other systems operating in the territory, but the heavy indebtedness has been too great a deterring factor.

Summer Courses in Coal Mining

Carnegie Institute of Technology, Schenley Park, Pittsburgh, Pa. June 25 to July 20.

School of Mines, College of Engineering, University of Alabama, University, Ala. June 4 to June 30. H. D. Pallister, Professor of Mining Engineering, School of Mines, University, Ala.

School of Mines, Pennsylvania State College, State College, Pa. June 25 to July 28. E. A. Holbrook, Dean of School of Mines, State College, Pa.

Department of Mining, West Virginia University, Morgantown, West Va. June 11 to July 21. A. C. Callen, Professor of Mining Engineering, Morgantown, West Va.

Coming Meetings

The American Wholesale Coal Association will hold its annual convention June 12 and 13 at the Gibson Hotel, Cincinnati, Ohio. Secretary, G. H. Merryweather, Union Fuel Bldg., Chicago, Ill.

Illinois and Wisconsin Retail Coal Dealers' Association will hold its annual meeting June 12-14 at Delavan, Wisconsin. Secretary, I. L. Runyan, Great Northern Building, Chicago, Ill.

Southwestern Interstate Coal Operators' Association will hold its annual meeting June 12 at Kansas City, Mo. General Commissioner, W. L. A. Johnson, Kansas City, Mo.

American Association of Mechanical Engineers will hold its spring meeting at Montreal, Quebec, Canada, May 28-31. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

New England Coal Dealers' Association will hold its annual meeting at Providence, R. I., June 13-15. Secretary, C. R. Elder, Boston, Mass.

National Retail Coal Merchants' Association will hold its sixth annual convention June 25, 26 and 27 at Scranton, Pa., with headquarters at the Hotel Casey.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Managing director and secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

International First-Aid and Mine-Rescue meet will be held Aug. 27-29, at Salt Lake City, Utah.

American Institute of Electrical Engineers will hold its annual convention June 25-29, at Swampscott, Mass. Secretary F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials will hold its annual meeting at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., beginning June 25 and continuing throughout the week. Secretary, E. Marburg, Philadelphia, Pa.

The Colorado & New Mexico Coal Operators' Association will hold its annual meeting June 20 at Denver, Col. Secretary, F. O. Sandstrom, Denver, Col.

The Electric Power Club's annual meeting will be held at the Homestead, Hot Springs, Va., June 11-14. Executive secretary, S. N. Clarkson, Cleveland, Ohio.

National Coal Association will hold its sixth annual convention June 19-22 at Atlantic City, N. J. Assistant secretary, C. C. Crowe, Washington, D. C.

Retail Coal Dealers' Association of Texas will hold its eighteenth annual convention at Galveston, June 11 and 12. Secretary, C. R. Goldmann, Dallas.

The American Institute of Mining and Metallurgical Engineers has accepted the invitation extended by the Ministers of Mines of Ontario and Quebec and by the Canadian Institute of Mining and Metallurgy to hold its autumn meeting in Canada. The meeting will start Aug. 20 at Toronto and end Aug. 30 at Montreal. Secretary, F. F. Sharpless, 29 West 39th Street, New York City.

The Illinois Mining Institute will hold its summer meeting on board a boat on the Illinois River, cruising between St. Louis, Mo. and La Salle, Ill., June 7-9. Secretary, Martin Bolt, State House, Springfield, Ill.

West Virginia Coal Mining Institute has set June 12 and 13 for its annual meeting, to be held at Hotel Waldo, Clarksburg, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.

The American Mining Congress will hold its twenty-sixth annual convention in conjunction with the **National Exposition of Mines and Mining Equipment,** Sept. 24-29, at the Milwaukee Auditorium, Milwaukee, Wis. Secretary, J. F. Callbreath, Washington, D. C.

Ninth National Exposition of Chemical Industries at the Grand Central Palace, New York City, week of Sept. 17. Manager, Charles F. Roth, Grand Central Palace, New York City.